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ABSTRACT

The first of two reports of a national evaluation of the immediate effects of Project Head Start describes the characteristics of children, families and programs in samples of full-year classes operating in 1968-69. The study identifies changes associated with Head Start participation and the conditions under which these changes were greatest. No control groups were used; comparisons were made within the Head Start sample to see what kinds of classroom experiences "work best" for what kinds of children. Chapters deal with: (1) Head Start and early childhood education; (2) research and evaluation studies of Head Start and other early childhood programs; (3) designs of the three years' evaluations; (4) limitations in the studies; (5) measures for 1968-69 analysis--program and performance variables; (6) the children: entering characteristics; (7) their families entering characteristics; (8) the programs--teachers, classrooms, activities; (9) gains associated with Head Start--cognitive and social-emotional measures and parent attitudes; (10) differences in gains for different types of children; (11) differences in gains associated with different program approaches; (12) relationships between program approaches and performance for different subgroups of children; (13) summary and conclusions; and (14) executive summary. Appendices provide locations and directions of Head Start E & R centers, more information about variables, and frequency distributions on dependent variables. References are provided. (KM)

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TECHNICAL MEMORANDUM

(TM Series)

EFFECTS OF DIFFERENT HEAD START PROGRAM APPROACHES ON CHILDREN OF DIFFERENT CHARACTERISTICS: REPORT ON ANALYSIS OF DATA FROM 1968-1969 NATIONAL EVALUATION

Contract No. HEW-OS-70-168

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1 May 1972

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TABLE OF CONTENTS

Chapter Page

I HEAD START AND EARLY CHILDHOOD EDUCATION 1

- A. Project Head Start--The Program and Its Objectives 2
- B. Development of Project Head Start 6

II RESEARCH AND EVALUATION STUDIES OF HEAD START AND OTHER EARLY CHILDHOOD PROGRAMS 13

- A. Census Surveys 13
- B. Individual Research Studies 13
  - 1. Short-Term and Long-Term Effects of Preschool Programs on Child Development 15
    - a. In the Area of Personal-Social Development 15
    - b. In the Areas of Cognitive, Linguistic, and Preacademic Development 16
  - 2. Degree of Program Structure 19
  - 3. Teacher Effects 23
  - 4. Parent Involvement 25
- C. Longitudinal Study by Educational Testing Service (ETS) 28
- D. The Head Start/Follow Through Planned Variation Longitudinal Study 29
- E. Special Purpose National Evaluation Studies 30
- F. The National Evaluation 31

III DESIGNS OF THE THREE YEARS' EVALUATIONS 33

- A. 1966-67 Evaluation 33
- B. 1967-68 Evaluation 34
- C. 1968-69 Evaluation 36

IV LIMITATIONS IN THE STUDIES 41

- A. Quasi-Experimental Nature of the Evaluation 41
- B. Lack of Non-Head Start Control Group 43
- C. Variations in Pretest Time and Pre-Post Interval 43
- D. Missing Data 44

V MEASURES FOR 1968-69 ANALYSIS 45

- A. Instruments 45
  - 1. Instruments Pertaining to Children 45
  - 2. Instrument Pertaining to Parents and Families 47
  - 3. Instruments Pertaining to Programs 47
- B. Procedures for Defining Variables 48
  - 1. Reorganization of Data Elements by Child 49
  - 2. Recoding of Data at Item Level 49
  - 3. Defining of Variables in Terms of Data Elements 50

TABLE OF CONTENTS (Cont'd)

Chapter Page

C. Initial Set of Variables 51
  1. Child-Oriented Variables 51
    a. Child Personal and Background Data 51
    b. Child's Family 51
    c. Timing of Instrument Administration and Period of Head Start Program's Influence 52
    d. Performance Measures on all Cognitive and Social-Affective Instruments Administered to the Children 52
    e. Variables Relating to the Parent's Attitudes 52
  2. Program-Oriented Variables 53
    a. Teacher's Personal and Background Variable 53
    b. Teacher Dynamics/Behavior 54
    c. Program/Curriculum Variables 54
    d. Materials and Equipment 55
D. Correlational Analyses of Initial Set of Variables 55
E. Selection of Subset of Variables for Analyses of Variance 72
  PROGRAM VARIABLES 73
  1. Teacher Background Data 73
    a. Level of Teacher's General Educational Preparation (TGEDPREP) 73
    b. Length of Teacher's Paid Experience with Disadvantaged Young (PDEXDSYG) 73
  2. Teacher Dynamics/Behavior 73
    a. Teacher's Emphasis on Cognitive Input (POT-COGN) 73
    b. Type of Control Used by Teacher (PIT-126A) 73
  3. Program/Curriculum (All variables derived from PPWIT) 74
    a. Parent-Centered Program (PARNTCNT) 74
    b. Program Emphasis on Child Independence and Self-Care (IND-SELF) 74
    c. Program Emphasis on Child Socialization (CHLDSOCL) 74
    d. Classroom Emphasis on Language Program (LANG-PRG) 75
  4. Materials and Equipment 75
    a. Classroom Materials for Cognitive Learning (COGNMATL) 75
    b. Equipment for Large Muscle Activities (MUSCLEQP) 75

TABLE OF CONTENTS (Cont'd)

Chapter Page

DEPENDENT (PERFORMANCE) VARIABLES 75

1. Child Cognitive Behavior 76
    - a. Stanford-Binet Test IQ 76
    - b. Caldwell-Soule Preschool Inventory 76
    - c. Caldwell-Soule: Personal-Social Responsiveness Subscores 76
    - d. Caldwell-Soule: Associative Vocabulary Subscores 77
    - e. Caldwell-Soule: Concept Activation-Numerical Subscore 77
    - f. Caldwell-Soule: Concept Activation-Sensory Subscore 77
    - g. Animal House 77
2. Child Affective/Social Behavior 77
    - a. Birch Work Response Score 78
    - b. Birch Verbal Response Score 78
    - c. Birch Spontaneous Response Score 78
    - d. Factors Affecting Stanford-Binet Test Performance 78
3. Parent Attitudes and Behavior 79
    - a. Attitude Toward Head Start 79
    - b. Attitude Toward Education 79
    - c. Feeling of Personal Power 79
    - d. Degree of Involvement in the Community 80
    - e. Feeling of Alienation 80

VI THE CHILDREN: ENTERING CHARACTERISTICS 81

A. Personal and Background Characteristics 81
1. South/Non-South Residence 81
2. Urban/Non-Urban Residence 81
3. Ethnicity 81
4. Child's Age 82
5. Child's Sex 82
6. Child's Prior Preschool Experience 82
7. Educational Opportunities in the Home 82

B. Pretest Performance 87
1. Cognitive Measures 87
    - a. Stanford-Binet IQ Score 87
    - b. Caldwell-Soule PSI 87

TABLE OF CONTENTS (Cont'd)

Chapter Page

- c. PSI: Personal-Social Responsiveness Subscore 90
- d. PSI: Associative Vocabulary Subscore 90
- e. PSI: Concept Activation-Numerical Subscore 90
- f. PSI: Concept Activation-Sensory Subscore 90
- g. Animal House 90

2. Social-Emotional Measures 96

- a. Birch Work Response Score 96
- b. Birch Verbal Response Score 96
- c. Birch Spontaneous Response Score 99
- d. Factors Affecting Test Performance 99

C. Entry Differences Related to Prior Preschool Experience 99

D. Summary 103

VII THEIR FAMILIES: ENTERING CHARACTERISTICS 105

- A. Socio-Economic Indicators 105
- B. Other Children in Head Start 108
- C. Parent Attitudes 108
- D. Summary 115

VIII THE PROGRAMS 117

- A. Teacher's Personal Characteristics 117
- B. Teacher's Formal Education 117
- C. Special Training and Experience 120
- D. Teacher-Reported Areas of Program Focus, and Mode of Control 120
- E. Reports Structured by Observers of Classroom Activities 130

1. Classroom Interactions Recorded on OSCI 130

- a. Class Variables 132
- b. Teacher Variables 138

2. Ratings of Teacher Behaviors 146

F. Classroom Materials and Equipment 150

TABLE OF CONTENTS (Cont'd)

Chapter Page

G. Observers' Anecdotal Records 153
H. Summary 164

IX GAINS ASSOCIATED WITH HEAD START 167

A. Pretest-Posttest Performance Changes 168

1. Cognitive Measures 168
2. Social-Emotional Measures 170
3. Parent Attitudes 171

B. Effects of Missing Data 171

C. Summary 172

X DIFFERENCES IN GAINS FOR DIFFERENT TYPES OF CHILDREN 177

A. Child's Age 177
B. Child's Sex 179
C. Child's Initial (Pretest) IQ 179
D. Urban/Non-Urban Residence 182
E. South/Non-South Residence 182
F. Mother's Educational Level 185
G. Summary 185

XI DIFFERENCES IN GAINS ASSOCIATED WITH DIFFERENT PROGRAM APPROACHES 187

A. Results of Analyses of Variance 189
B. Summary 206

XII RELATIONSHIPS BETWEEN PROGRAM APPROACHES AND PERFORMANCE FOR DIFFERENT SUBGROUPS OF CHILDREN 209

A. Subsetting Variables 209

1. Child's Initial IQ 210
2. Child's Age 211
3. Urban vs. Non-Urban Residency 211

B. Results of Analyses for Different Subgroups 212

1. Teacher's Use of Physical Control (PIT-126A) 214
2. Emphasis on Child's Independence and Self-Care (IND-SELF) 214
3. Large-Muscle Equipment (MUSCLEQP) 218
4. Program Emphasis on Child Socialization (CHLDSOCL) 223
5. Level of Teacher's General Education Preparation (TGEDPREP) 227
6. Teacher's Paid Experience with Disadvantaged Young (PDEXDSYG) 233
7. Emphasis on Language Program (LANG-PRG) 236
8. Teacher's Quality of Cognitive Input (POT-COGN) 241
9. Cognitive Learning Materials (COGNMATL) 245
10. Parent-Centered Program (PARNTCNT) 248

C. Summary 248

TABLE OF CONTENTS (Cont'd)

Chapter | | Page
XIII SUMMARY AND CONCLUSIONS 255

A. Data Collection Instruments 257

1. Instruments Pertaining to Children 257
2. Instrument Pertaining to Parents and Families 259
3. Instruments Pertaining to Programs 259

B. Major Findings 260

1. Entry Characteristics of Children and Parents 260
2. Characteristics of the Programs 263
3. Gains Associated with Head Start Participation 266
4. Differences in Gains for Different Groups of Children 271
5. Differences in Gains with Different Program Approaches 275
6. Interactions Between Child and Program Variables 302

XIV EXECUTIVE SUMMARY 308

A. What Kinds of Children and Parents Participated 308
B. What Were the Programs Like 309
C. Did Head Start Children and Their Parents Make Gains 310
D. Did Some Kinds of Children Gain More Than Others 310
E. Were There Larger Gains in Certain Types of Programs 310
F. Did Certain Types of Children Gain More From Certain Kinds of Programs 312

APPENDIX

A LOCATIONS AND DIRECTORS OF HEAD START E&R CENTERS 315

B MORE DETAILED DEFINITIONS OF VARIABLES USED IN ANALYSES OF VARIANCE 319

C FREQUENCY DISTRIBUTIONS OF PRETEST, POSTTEST, AND GAIN SCORES ON DEPENDENT VARIABLES 333

REFERENCES 369

LIST OF TABLES

Tables		Page
1	Head Start Funds, Programs and Children, 1965 Through 1973	5
2	Pre Vs. Post Correlations Between Indep. Variables and Values on Stanford-Binet	57
3	Pre Vs. Post Correlations Between Indep. Variables and Values on Caldwell-Soule PSI	58
4	Pre Vs. Post Correlations Between Indep. Variables and Values on PSI - Personal-Social Responsiveness Subscore	59
5	Pre Vs. Post Correlations Between Indep. Variables and Values on PSI - Associative Vocabulary Subscore	60
6	Pre Vs. Post Correlations Between Indep. Variables and Values on PSI - Concept Activation - Numerical Subscore	61
7	Pre Vs. Post Correlations Between Indep. Variables and Values on PSI - Concept Activation - Sensory Subscore	62
8	Pre Vs. Post Correlations Between Indep. Variables and Values on Animal House	63
9	Pre Vs. Post Correlations Between Indep. Variables and Values on Birch Work Response Score	64
10	Pre Vs. Post Correlations Between Indep. Variables and Values on Birch Verbal Response Score	65
11	Pre Vs. Post Correlations Between Indep. Variables and Values on Birch Spontaneous Response Score	67
12	Pre Vs. Post Correlations Between Indep. Variables and Values on Factors Affecting Test Performance (FATP)	68
13	Pre Vs. Post Correlations Between Indep. Variables and Values on Sociometric Social Isolate Score	69
14	Pre Vs. Post Correlations Between Indep. Variables and Values on Parent Attitude Toward Head Start	69
15	Pre Vs. Post Correlations Between Indep. Variables and Values on Parent Attitude Toward Education	69
16	Pre Vs. Post Correlations Between Indep. Variables and Values on Parent Feeling of Personal Power	70
17	Pre Vs. Post Correlations Between Indep. Variables and Values on Parent Degree of Involve. in Community	70
18	Pre Vs. Post Correlations Between Indep. Variables and Values on Parent Feeling of Alienation	71

LIST OF TABLES (Cont'd)

Tables		Page
19	Distribution of Values on South/Non-South Residence	83
20	Distribution of Values on Urban/Non-Urban Residence	83
21	Distribution of Values on Child's Ethnicity	84
22	Distribution of Values on Child's Age at Entry (Months)	84
23	Distribution of Values on Child's Sex	85
24	Distribution of Values on Child's Prior Preschool Experience	85
25	Distribution of Values on Educational Opportunities in the Home	86
26	Distribution of Values on Stanford-Binet (Pre)	88
27	Distribution of Values on Caldwell-Soule PSI (Pre)	89
28	Distribution of Values on PSI: Personal-Social Responsiveness Subscore (Pre)	91
29	Distribution of Values on PSI: Associative Vocabulary Subscore (Pre)	92
30	Distribution of Values on PSI: Concept Activation-Numerical Subscore (Pre)	93
31	Distribution of Values on PSI: Concept Activation-Sensory Subscore (Pre)	94
32	Distribution of Values on Animal House Pretest	95
33	Distribution of Values on Birch Work Response Score (Pre)	97
34	Distribution of Values on Birch Verbal Response Score (Pre)	98
35	Distribution of Values on Birch Spontaneous Response Score (Pre)	100
36	Distribution of Values on Factors Affecting Test Performance (Pre)	101
37	Comparison of Pretest Scores for Children With and Without Prior Preschool Experience	102
38	Distribution of Values on Family Income	106
39	Distribution of Values on Mother's Education	106
40	Distribution of Values on Mother's Occupation (Pre)	107
41	Distribution of Values on Father's Education	107
42	Distribution of Values on Father's Occupation	109
43	Distribution of Values on Number of Children in Head Start	109

LIST OF TABLES (Cont'd)

Tables		Page
44	Distribution of Values on Number of Children Previously in Head Start	110
45	Distribution of Values on Parent Attitude Toward Head Start (Pre)	110
46	Distribution of Values on Parent Attitude Toward Education (Pre)	111
47	Distribution of Values on Parent Feeling of Personal Power (Pre)	111
48	Distribution of Values on Parent Degree of Involve. in Community (Pre)	113
49	Distribution of Values on Parent Feeling of Alienation (Pre)	114
50	Distribution of Values on Teacher's Age	118
51	Distribution of Values on Teacher's Sex	118
52	Distribution of Values on Teacher's Ethnicity	119
53	Distribution of Values on Teacher's General Education Preparation	119
54	Distribution of Values on Teacher's Formal Education Training in Early Childhood	121
55	Distribution of Values on Teacher's Preparatory Training for Head Start	121
56	Distribution of Values on Teacher's Paid Experience with Disadvantaged Young	122
57	Distribution of Values on Child-Centered Program	123
58	Distribution of Values on Task-Centered Program	125
59	Distribution of Values on Parent-Centered Program	126
60	Distribution of Values on Language Program Emphasis	128
61	Distribution of Values on Child Socialization	129
62	Distribution of Values on Independence and Self-Care	131
63	Distribution of Values on Type of Control Used by Teacher	131
64	Distribution of Values on OSCI Class Variable - Programmed Materials	133
65	Distribution of Values on OSCI Class Variable - Social-Physical Activities	135
66	Distribution of Values on OSCI Class Variable - Social Emotional Interaction	136
67	Distribution of Values on OSCI Class Variable - Verbal Communication/Activities	137

LIST OF TABLES (Cont'd)

Tables		Page
68	Distribution of Values on OSCI Class Variable - Visual-Motor/Activities	139
69	Distribution of Values on OSCI Class Variable - Language Materials	140
70	Distribution of Values on OSCI Teacher Variable - Emotional/All Contexts	142
71	Distribution of Values on OSCI Teacher Variable - Language/Structured Lesson	143
72	Distribution of Values on OSCI Teacher Variable - Art/Painting	144
73	Distribution of Values on OSCI Teacher Variable - Small Group Instruction	145
74	Distribution of Values on OSCI Teacher Variable - Mechanical/Activities	147
75	Distribution of Values on OSCI Teacher Variable - Language/Watching-Listening	148
76	Distribution of Values on Teacher's Quality of Cognitive Input	149
77	Distribution of Values on Teacher's Concern for Child	151
78	Distribution of Values on Cognitive Materials	152
79	Distribution of Values on Large-Muscle Equipment	154
80	Distribution of Values on Sensory-Motor Materials	155
81	Average Observer Ratings for Classes in Eight E&R Centers, on Seven Developmental Goals	158
82	Pretest-Posttest Performance Changes	169
83	Frequency Distributions of Gain Scores on Stanford-Binet	174
84	Differences in Child Gains Associated With Child's Age	178
85	Differences in Child Gains Associated With Child's Sex	180
86	Differences in Child Gains Associated With Child's Pretest IQ	181
87	Differences in Child Gains Associated With Urban/Non-Urban Residence	183
88	Differences in Child Gains Associated With South/Non-South Residence	184
89	Differences in Child Gains Associated With Mother's Education Level	186
90	Results of Analyses of Variance on Teacher's Use of Physical Control (PIT-126A)	191

LIST OF TABLES (Cont'd)

Tables		Page
91	Results of Analyses of Variance on Emphasis on Independence and Self-Care (IND-SELF)	192
92	Results of Analyses of Variance on Large-Muscle Equipment (MUSCLEQP)	194
93	Results of Analyses of Variance on Emphasis on Child Socialization (CHLDSOCL)	195
94	Results of Analyses of Variance on Level of Teacher's General Education Preparation (TGEDPREP)	197
95	Results of Analyses of Variance on Teacher's Paid Experience With Disadvantaged Young (PDEXDSYG)	199
96	Results of Analyses of Variance on Emphasis on Language Programs (LANG-PRG)	201
97	Results of Analyses of Variance on Teacher's Quality of Cognitive Input (POT-COGN)	202
98	Results of Analyses of Variance on Cognitive Learning Materials (COGNMATL)	204
99	Results of Analyses of Variance on Parent-Centered Program (PARNTCNT)	205
100	Analysis of Variance on Teacher's Use of Physical Control (PIT-126A): Subset by Child's Age and Pretest IQ	215
101	Analysis of Variance on Teacher's Use of Physical Control (PIT-126A): Subset by Urban/Non-Urban Residence	216
102	Analysis of Variance on Emphasis on Independence and Self-Care (IND-SELF): Subset by Pretest IQ	217
103	Analysis of Variance on Emphasis on Independence and Self-Care (IND-SELF): Subset by Child's Age	219
104	Analysis of Variance on Emphasis on Independence and Self-Care (IND-SELF): Subset by Urban/Non-Urban Residence	220
105	Analysis of Variance on Large-Muscle Equipment (MUSCLEQP): Subset by Pretest IQ	221
106	Analysis of Variance on Large-Muscle Equipment (MUSCLEQP): Subset by Child's Age	222
107	Analysis of Variance on Large-Muscle Equipment (MUSCLEQP): Subset by Urban/Non-Urban Residence	224
108	Analysis of Variance on Emphasis on Child Socialization (CHLDSOCL): Subset by Pretest IQ	225

LIST OF TABLES (Cont'd)

Tables		Page
109	Analysis of Variance on Emphasis on Child Socialization (CHLDSOCL): Subset by Child's Age	226
110	Analysis of Variance on Emphasis on Child Socialization (CHLDSOCL): Subset by Urban/Non-Urban Residence	228
111	Comparison of Mean Scores for Two Levels of Teacher's General Education Preparation (TGEDPREP)	229
112	Analysis of Variance on Teacher's General Education Preparation (TGEDPREP): Subset by Pretest IQ	231
113	Analysis of Variance on Teacher's General Education Preparation (TGEDPREP): Subset by Child's Age	232
114	Analysis of Variance on Teacher's General Education Preparation (TGEDPREP): Subset by Urban/Non-Urban Residence	234
115	Comparison of Mean Scores for Two Levels of Teacher's Paid Experience With Disadvantaged Young (PDEXDSYG)	235
116	Analysis of Variance on Teacher's Paid Experience With Disadvantaged Young (PDEXDSYG): Subset by Pretest IQ	237
117	Analysis of Variance on Teacher's Paid Experience With Disadvantaged Young (PDEXDSYG): Subset by Child's Age	238
118	Analysis of Variance on Teacher's Paid Experience With Disadvantaged Young (PDEXDSYG): Subset by Urban/Non-Urban Residence	239
119	Analysis of Variance on Emphasis on Language Programs (LANG-PRG): Subset by Pretest IQ	240
120	Analysis of Variance on Emphasis on Language Programs (LANG-PRG): Subset by Child's Age	242
121	Analysis of Variance on Emphasis on Language Programs (LANG-PRG): Subset by Urban/Non-Urban Residence	243
122	Analysis of Variance on Teacher's Quality of Cognitive Input (POT-COGN): Subset by Child's Age and Pretest IQ	244
123	Analysis of Variance on Teacher's Quality of Cognitive Input (POT-COGN): Subset by Urban/Non-Urban Residence	246
124	Analysis of Variance on Cognitive Learning Materials (COGNMATL): Subset by Mother's Education Level	247
125	Analysis of Variance on Cognitive Learning Materials (COGNMATL): Subset by Child's Age	249
126	Analysis of Variance on Parent-Centered Program (PARNTCNT): Subset by Child's Age, Pretest IQ, and Urban/Non-Urban Residence	250

LIST OF TABLES (Cont'd)

Tables		Page
127	Comparison of Pretest Scores for Children with and without Prior Preschool Experience	262
128	Pretest-Posttest Performance Changes	267
129	Frequency Distributions of Gain Scores on Stanford-Binet	270
130	Differences in Child Gains Associated with Child's Pretest IQ	272
131	Differences in Child Gains Associated with Urban/ Non-Urban Residence	274
132	Results of Analyses of Variance on Teacher's Use of Physical Control	277
133	Results of Analyses of Variance on Emphasis on Independence and Self-Care	279
134	Results of Analyses of Variance on Large-Muscle Equipment	281
135	Results of Analyses of Variance on Emphasis on Child Socialization	283
136	Results of Analyses of Variance on Level of Teacher's General Education Preparation	285
137	Comparison of Mean Scores for Two Levels of Teacher's General Education Preparation	287
138	Results of Analyses of Variance on Teacher's Paid Experience with Disadvantaged Young	289
139	Comparison of Mean Scores for Two Levels of Teacher's Paid Experience with Disadvantaged Young	290
140	Results of Analyses of Variance on Emphasis on Language Programs	293
141	Results of Analyses of Variance on Teacher's Quality of Cognitive Input	295
142	Results of Analyses of Variance on Cognitive Learning Materials	297
143	Results of Analyses of Variance on Parent-Centered Program	300

CHAPTER I

HEAD START AND EARLY CHILDHOOD EDUCATION

This is a report of a national evaluation of the immediate effects of Project Head Start. Head Start, Title I of the Elementary and Secondary Education Act, and Sesame Street are among the best known programs which are directed to young children from low-income families. Head Start is a comprehensive center-based program now serving approximately 360 thousand preschool children in communities in every state and territory. Title I funds are used to supplement public school services and equipment for about 1.1 million kindergarten and first-grade children in low-income districts across the country. Head Start and Title I programs, both initiated in 1965, were joined in 1970 by Sesame Street, a nationally popular television program designed to improve the school readiness of low-income preschool children. The effects of Head Start, Title I, Sesame Street and similar programs have been of great interest for both practical and theoretical reasons.

This report describes the characteristics of children, families, and programs in samples of full-year classes operating in 1968-69. A supplementary report will present findings from 1966-67 and 1967-68 samples. The study was designed to identify changes associated with Head Start participation, and the conditions under which these changes were greatest. There are no control groups of eligible children who did not attend Head Start; the emphasis is on comparisons within the Head Start sample to see what kinds of classroom experiences "work best" for what kinds of children. The findings will be compared with those from studies, both cross-sectional and longitudinal, of Head Start and other preschool programs.

It is important to emphasize that this is not a comprehensive report on Head Start; only some aspects of child development in relation to only one component of the program--the child's classroom experience--are considered. While the study thus addressed only a limited array of the many questions asked about early education and Head Start, the data nevertheless represent an extremely rich and varied source of information on the child in relation to his classroom experience. Among the questions addressed are:

- What changes in the children's personal adjustment, social relationships, achievement, motivation, scholastic readiness, and cognitive performance are associated with Head Start participation?

- What changes in family characteristics, particularly those related to the family's attitudes toward education, and sense of personal control over events, are associated with Head Start participation?

- What influence do teacher characteristics such as training, education, and experience have on the child's development? What are the relationships of different aspects of child development with such classroom characteristics as materials and equipment, amount of specific training in language and quantitative skills, and emphasis on personal/social development?

- Do age, child's sex, and initial development influence the gains made? Do these characteristics and others interact with the characteristics of the educational program? If so, what are the implications of these findings for Head Start and other preschool programs?

A. PROJECT HEAD START--THE PROGRAM AND ITS OBJECTIVES

Head Start is a comprehensive intervention program designed to provide children of poverty with a wide range of services to meet their needs and to contribute to their enjoyment of a healthy, happy childhood. In concert with other programs directed to the needs of adults, Head Start is seen as contributing opportunities for each child to reach his fullest developmental potential in later school work and in his life as an adult. The seven major objectives of Head Start were described by a panel of experts in February, 1965 as:

1. Improving the child's physical health and physical abilities.

2. Fostering the emotional and social development of the child by encouraging self-confidence, spontaneity, curiosity, and self-discipline.

3. Improving the child's mental processes and skills with particular attention to conceptual and verbal skills.

4. Establishing patterns and expectations of success for the child that will create a climate of confidence for his future learning efforts.

5. Increasing the child's capacity to relate positively to family members and others while strengthening the family's ability to relate positively to the child and his problems.

6. Developing in the child and his family a responsible attitude toward society, and fostering constructive opportunities for society to work together with the poor in solving their problems.

7. Increasing the sense of dignity and self-worth within the child and his family.

To achieve these varied objectives, Head Start programs have a number of distinct components: teacher-aide training; career development; social services; health services, including medical and dental care and education; nutrition; volunteer and community participation; parent participation at policy and operational levels; and the actual classroom program. Thus, although Head Start is often thought of in the context of preschool compensatory education, education in the narrowly academic sense is only one part of a multifaceted program that is also concerned with the children's affective, social, and physical development, and with strengthening the communities of which the Head Start programs are a part.

Since 1965, Head Start has served close to three million children in the eight-week summer programs and over one and a half million children in the full-year programs. Table 1 shows the number of children served and the yearly cost since 1965.

The conditions which led to the establishment of Project Head Start have been described in a great many texts, reviews, and reports. A wealth of material is available through the ERIC Early Childhood Clearinghouse at Urbana, Illinois, and in Stearns (1971). To recapitulate briefly, some of the important factors included:

- Growing public and governmental support for efforts to reduce the obvious racial and economic inequalities in all parts of the country. This general mood led to the creation in 1961 of the Office of Economic Opportunity and to the declaration of the "War on Poverty".

- Increased recognition that educational inequalities are a major factor in creating or perpetuating inequalities in earning power and general quality of living. One result of this recognition was the 1954 United States Supreme Court ruling on racial desegregation in the schools. In the ensuing efforts to redress racial inequalities, it soon became evident that many of the inequalities were as much a function of socioeconomic differences as of racial differences. Attention then began to focus on how compensatory education for disadvantaged children might be used to help break the poverty cycle.

- An accumulation of theory and evidence, from early studies by the Iowa Child Welfare group (Skeels and Dye, 1939) to work by Hunt (1961) and Bloom (1964) showing that, in the early years of a child's life, environmental factors are particularly powerful in shaping his future growth and development.

Table 1

HEAD START FUNDS, PROGRAMS AND CHILDREN,
1965 THROUGH 1973 (DOLLARS IN MILLIONS)

Year	FY	Funds	Grants	Children	
Summer 1965	66	$85.0	2,397	561,000	
Full Year 1965-66	--	--	--	--	
Summer 1966	67	98.0	1,645	573,000	
Full Year 1966-67		81.9	470	160,000	
Summer 1967	68	116.6	1,249	466,300	
Full Year 1967-68		210.4	750	215,100	
Summer 1968	69	91.0	1,185	476,200	
Full Year 1968-69		192.0	709	217,700	
Summer 1969	70	90.2	1,100	446,900	
Full Year 1969-70		212.3	700	216,700	
Summer 1970	71	26.1	504	117,461	
Full Year 1970-71		298.7	1,152	264.714	
Summer 1971	72	22.0	450	89,600	EST.
Full Year 1971-72		317.5	1,225	278,880	
Summer 1972	73	20.0	425	77,600	EST.
Full Year 1972-73		335.1	1,240	281,280	

PS 006342

- Research findings (e.g., see Deutsch, Bloom, Deutsch, Goldstein, John, Katz, Levinson, Peisach and Whiteman, 1967; Butler, 1970; and Hellmuth, 1970), indicating that disadvantaged children are deprived of many of the opportunities most conducive to effective growth in the critical early years.

In 1965, the Office of Economic Opportunity initiated Project Head Start. The program was recognized as part of OEO in the OEO Act of 1967.

B. DEVELOPMENT OF PROJECT HEAD START

Project Head Start, first introduced in the summer of 1965 as an eight-week pilot program, met with instant popularity, attracting an initial enrollment of over 500,000 children. It was recognized very early, however, that a much longer exposure would be necessary to have more enduring and significant effect in offsetting the results of earlier deprivations, and in August 1965 the first full-year Head Start programs were initiated. Because of problems in locating suitable sites and the unavailability of suitably trained administrators and staff personnel, few such programs were operational until 1966-67, and even then there was wide disparity in opening and closing dates. For example, only about 10% of the 1966-67 full-year programs were open by September 1966, about 10% more were added in October, and only about 50% had on-going classes by January 1967. The 1968-69 program year was the first during which the full-year programs could be considered to have achieved stable operation. New programs were funded throughout 1967-68, and national programs for training, supervision and career development were initiated during this period.

Head Start programs are characterized by a high degree of diversity. Different centers and classrooms across the country operate within comprehensive but broad guidelines. Within those guidelines the individual centers vary so widely that there are, in effect, hundreds of Head Start programs, rather than a single homogeneous program. This diversity is only partially due to a lack of knowledge as to what types of educational programs are most appropriate for young disadvantaged children from backgrounds as diverse as those attending Head Start. A major factor is the desire of Head Start designers and planners to allow the greatest possible local autonomy. Communities are encouraged to "do their own thing," and to develop Head Start approaches that best reflect their particular needs and resources as long as the guidelines prescribing the comprehensive program are met. In this way, it is felt, programs can be made more responsive to local conditions, and community support and acceptance can be maximized.

Thus, Head Start programs across the country differed widely (and still do) in many dimensions--in the characteristics of enrolled children; in the characteristics of the facilities, materials, and staff; and in program emphasis and approaches. Some Head Start programs are operated by local education agencies, some by community action groups, and still others by churches. Some are housed in well-furnished school buildings, with access to expensive materials, toys, and play equipment, while others operate in storefront quarters or converted apartments, making do with toys and materials that are donated by the community. Staff resources also vary widely. Some centers have a predominance of highly educated professional teachers, while others, by choice or necessity, rely primarily on community aides and volunteer workers.

Different centers have their own ideas about where the major program emphasis should be placed, and about the best approaches to achieving the priority objectives. For example, some centers focus on the children's cognitive and language development, while others are more concerned with social and affective growth, or with promoting active parent involvement. Individual teachers differ somewhat in these respects, even within centers.

As objectives vary, so do the theoretical orientations. The characteristics of a few programs are dictated by carefully defined preschool intervention models such as the highly structured Bereiter-Engelmann program; the Montessori Method with its emphasis on self-directed learning; and the environmental discovery and feedback program of Dr. Glen Nimnicht. Other Head Start programs, though unrelated to particular models, have assumed a recognizable structure or combination of features as they developed. Sometimes this structure was in response to a specific need such as the bilingual-bicultural approach used in Mexican-American neighborhoods; often the structure was shaped by special resources, such as availability of Neighborhood Youth Corps members for cross-age tutoring.

However, the majority of centers can best be described as eclectic, combining a wide variety of features (see Boyd, 1966). In those centers where models or structures did exist, they have usually emphasized one program characteristic, leaving the centers open to much variation on others. Thus, for most centers, it is not possible to define programs along a single dimension, or even three or four dimensions. Rather, they have to be characterized along many different dimensions, taking into account the different objectives, the available resources, and the way in which those resources are used by the centers. Some of the sense of this diversity is seen in reports from classroom observers of three inner-city Northern programs:

- "This was a disciplined and quiet class, a mini-grammar school atmosphere. Every morning, the children gathered together in a group where each was tested as to his knowledge of words and spellings. The teacher emphasized the children's ability to communicate, giving them tasks such as to describe to the class what they had done over the weekend; she pretty much separated the learning process from the creative process... In general, the atmosphere of the class was comfortable if not exactly exciting. The teacher interacts with children on a group basis rather than individually, but when a child needs individual attention, she does give it to him and is very nice to the child..."

- "This class had three different teachers during the course of the year. Since all three were very different in personality and technique, the class faced many readjustments. With the present teacher, the children make few decisions other than choosing from the activities offered during free play. The teacher's concern with good behavior and quietness may be in part determined by the echoing quality of her classroom. It is a class with some overactive boys and many highly individualistic children. The number and variety of activities this teacher offers are strong points. She can tolerate messy activities like water play, soapsuds, clay and planting.

Her inability to see the children as individuals with individual needs is a weak point."

- "The classroom environment was rich and facilities and equipment for dramatic play and housekeeping were purposefully used. Children were given ample opportunities to make their own decisions. The children were generally well-behaved, with no outward appearances of any serious emotional frustrations that were beyond their tolerance. The teacher usually controlled the children by just talking or reasoning with them or directing their attention to a new activity. No physical punishment was ever observed. It was noted that the professional services of a psychologist and social worker were available. There was a strong awareness of the child development approach which was being implemented in a positive, goal-oriented way. Despite the fact that the teacher aide, who became the teacher in spring was not a certified staff teacher, her love, warmth, sympathy and sensitivity to the individual needs of children were outstanding, and were reflected in the children, who appeared happy and productive."

- "The children seemed to be occupied and happy, and were seldom observed wandering aimlessly. They knew their way around and seemed secure in their surroundings. Lunch time was used to socialize and celebrate children's birthdays. When they were in need of help or in search of knowledge or information about things they did not understand, they did not hesitate to ask countless questions of teachers and peers. One of the best things about this class was the teacher-child relationship, especially the children's readiness and desire to communicate in many ways--verbally and by accomplishments--and the teacher's willingness to respond in various ways--verbally, by stimuli and praise. The worst? During free play, when a large number of children selected arts and crafts activities at the same time, the facilities and equipment were inadequate."

The children served by Head Start have, from the beginning of the program, varied almost as widely as the individual Head Start programs themselves. For example, although the eligibility guidelines require that at least 90% of the Head Start children be from poverty families, there is still considerable room for variation in the degree of poverty and in the cause of poverty. Children also differ in age (from about three years to over six years) and ethnicity. Although the majority of Head Start children are Negro or Anglo, there are substantial numbers of Polynesian, Mexican-American, Puerto Rican, American Indian, and Eskimo children.

Since 1966-67, many new Head Start programs have been created, and an increasing percentage have been full-year programs. In 1969-70, for example, Head Start served 446,900 children in summer classes and 216,700 in full-year programs. As operational experience has accumulated, impractical or unproductive approaches have been abandoned, and others have been refined. Researchers have developed models of how the centers should operate, and have tested at least some of the most important components.

In many centers, greater emphasis has been placed on the development of more clearly defined objectives and on the adoption of a cognitive orientation and a structured curriculum. These changes undoubtedly reflect early findings (e.g., Gray and Klaus, 1965; Bereiter and Engelmann, 1966; Deutsch, 1969; Weikart, DeLoria, Lawser, and Weigerink, 1970) that structured, cognitively-oriented curricula provide effective models for early intervention.

Another major change has been in the area of staffing. Many centers are demanding higher levels of skill and often requiring specialized training in work with young children and disadvantaged groups. As indicated earlier, career development is a major component of Head Start, and centers have conducted extensive workshops for training community aides and para-professionals.

Active parent and community participation, a basic policy of Head Start since its inception, was at first difficult to implement because of the enormous pressures just to "get something started." In subsequent years, new rulings made it possible for parents to take an active role not only in local program activities, both as volunteers and as paid teachers or aides, but in policy making at all levels.[1]

The changing nature of the Head Start programs and their great diversity, both in program features and in program objectives, have made it difficult to evaluate Head Start programs. Nevertheless, evaluation has been an important recognized need from the beginning, and a specific portion of the Head Start budget is allocated for this purpose. Over the past few years several million dollars have been spent in a wide variety of research and evaluation efforts. These studies and others relating to early child development are summarized briefly in the next chapter.

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[1] Major sources of information for this section are Stearns (1971), Bates (1969; 1970; 1972, in press), the 1967 Head Start Manual, and Head Start publications such as the Rainbow Series describing the national requirements for each program component.

CHAPTER II

RESEARCH AND EVALUATION STUDIES OF HEAD START AND OTHER EARLY CHILDHOOD PROGRAMS

Head Start research and evaluation studies can be grouped into six categories: census surveys, individual research studies, the five-year longitudinal study by Educational Testing Service, the "planned variations" experiment evaluated by the Stanford Research Institute, special purpose national evaluations, and the 1966-69 E&R Center national evaluations.

A. CENSUS SURVEYS

The Bureau of the Census has conducted several descriptive studies of a nationally representative sample of Head Start centers, using questionnaires prepared by Head Start program specialists. The major function of the surveys was to assess the degree of compliance with Head Start guidelines in terms of the characteristics of the children and families served, and the services offered by the Head Start centers. Results of the surveys are available through ERIC (*vide* Bates, 1969; 1970; and 1972, in press). In general these surveys show overall compliance with the guidelines, rapid progress from 1965 to 1969 in such key areas as parent participation, and diversity within the guidelines in how Head Start delivers services, and to whom.

B. INDIVIDUAL RESEARCH STUDIES

Well over a hundred research studies have been conducted on different aspects of the Head Start program, most of them supported by the Office of Economic Opportunity.[1] Many of these have been small studies at only one or two Head Start centers. Often they have involved fewer than a hundred children, have used only a small number of performance measures (usually standardized intelligence or achievement tests), and have been of short duration.

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[1] Since 1970, Head Start has been operated by the Office of Child Development of the Department of Health, Education, and Welfare, under delegation from OEO. Authorization to fund research studies of Head Start was retained by OEO; authorization to conduct Type II and III (formative and monitoring) evaluations of Head Start was delegated to HEW.

In addition to studies supported by Head Start, reports on early child development progress have been prepared by the Office of Education, the National Institute of Mental Health, the Ford and Carnegie Foundations, and many other agencies and individuals.

It is difficult to categorize the many research studies of Head Start and other preschool programs or to summarize their results. A major reason is that prior to 1969, very little was known about the critical dimensions of the programs or of the children, families, and communities that the programs served. Thus there was no clearcut conceptual framework within which the studies could be organized, and individual researchers followed their own interests and inclinations. Consequently, almost every study involved a different combination of treatment conditions, child characteristics (e.g., age, ethnicity, socioeconomic level, initial IQ), and performance measures. Despite these difficulties, however, there have been several highly useful analyses of Head Start and other research findings (Grotberg, 1969; Datta, 1970; Butler, 1970; Stearns, 1971).

Several dominant issues, which appear fairly consistently and thus are used as the framework for this summary, are as follows:

- What are the immediate and short-term effects on children of the preschool experience? What are the longer-range effects?

- How does the degree of structure of a program affect its impact on the children?

- How do differences in teacher characteristics and approaches affect the children?

- Do children and parents benefit from active parent involvement in the programs?

- What are other effects of the programs?

1. Short-Term and Long-Term Effects of Preschool Programs on Child Development

As summarized by Grotberg (1969), Stanford Research Institute (1971), and Stearns (1971), there have been numerous reports showing significant immediate effects of participation in preschool programs on personal-social, language, and cognitive development. Many, but not all, of these studies have compared disadvantaged children who have attended summer and full year programs and other children of similar background who have had no formal preschool experience. It seems clear from these studies that a wide variety of preschool interventions can be of benefit to the child.

a. In the Area of Personal-Social Development

- Emmerich (1971), using time-sample structured observations of Head Start children during free-play, reported substantial increases in cooperativeness with materials, cooperativeness with peers, friendliness, approach to adults, self-confidence, assertiveness, achievement orientation, use of verbal rather than non-verbal communication, and curiosity; and decreases in shyness, timidity, and withdrawal in boys and girls, younger and older children. This improvement takes place within the first six months of program experience.

- Dittman et al. (1971) using the intensive case history approach reported similar changes in individual Head Start children. Their observations of individual differences in the pace, areas, and direction of development points out nuances that become obscured in group analyses. An example of their observations is given below for two children from the same class:

> "Trying to imagine what the year would have been like for Harold without Head Start leads one to conclude that the experience has been a great asset although no progress has been made with his speech disorder.... Harold seems happier and less stoically ready to fight for every inch."

> "Sandy has moved from tearful outbursts when her mother left her at school to a calm acceptance of school and her mother's comings and goings. She has days of moody irritability and will cry for reasons no one understands. She clings to adults and shows exploitive dependency in relation to them. Because of this immature behavior,

one is always surprised at the clarity of her speech, the fast speech pattern, and the good vocabulary. It is almost as if an 18-month-old child suddenly began to recite the Declaration of Independence. The teacher noted to her pleasure that Sandy moved to defend herself physically when a boy threw dirt at her on the playground."

Both Dittman and Emmerich observe that personal-social development from midwinter through spring is less regular than during the earlier period, suggesting that programs may not keep pace with the children's changing interests and abilities.

- Lamb, Ziller and Maloney (1965) tested Head Start children with a projective measure of self-esteem, and found reliable increases in the children's self concept, both in their opinions of themselves and in how they thought others would view them.

Most of the positive findings regarding affective and social development have come from observations and teachers' reports, possibly because of the shortage of well-tested, reliable instruments in this area for preschoolers. As summarized by Grotberg (1969), the data show that Head Start increases the children's interest in new things, and improves their interpersonal interactions, task orientation, self concept, and adaptation to situations involving adults, such as testing.

b. In the Areas of Cognitive, Linguistic, and Preacademic Development

- Beller (1969) compared disadvantaged black children who attended a full-year Head Start-like program with a similar non-Head Start control group. Stanford-Binet (SB) performance of the Head Start group increased from 90 to 95, while scores of the control children did not change. Similar results were reported for the Peabody Picture Vocabulary Test (PPVT).

- Horowitz and Rosenfeld (1966) reported that summer Head Start groups made substantial gains on the PPVT, although the final level of performance showed additional room for improvement.

- Sontag, Sella and Thorndike (1969) reported a significant difference on the preschool inventory between children who completed six to seven months in a full-year Head Start program and a matched group of the same age about to enter the program. The SB of the experienced group was 100.2; of the new group, 96.1.

- Alexander (1968) reported SB gains for inner-city black children attending full-year Head Start programs of from 92.8 to 101.7.

- Di Lorenzo et al. (1969) in a large-scale study of state-sponsored pre-kindergartens, found that disadvantaged children attending programs had higher scores than controls who did not (e.g., SB 94.2 vs. 89.5).

- Kraft et al. (1968) reported a gain of from 82 to 97 on the SB after two years of a traditional-type preschool for black inner-city children, while at-home controls changed from 84.6 to 88.7.

- Sprigle (1971) reported SB changes of from 101.1 to 109.5; 90.3 to 99.1; and 78.7 to 87.7, for upper, middle, and lower third initial performance groups, respectively, in his structured kindergarten program.

- Karnes et al. (1969) reported a change of from 94.9 to 102.7 for low-income children attending a preschool; Weikart (1971) reported a change of from 74.6 to 101.1 for seven poverty children who attended a traditional preschool under his direction.

- Ball and Bogartz (1971) found that watching Sesame Street substantially increased performance on a large number of criterion-referenced tasks appropriate to the program's academic readiness objectives; in comparison to middle-class non-viewers, low-income, high-frequency viewers gained more and achieved higher final scores.

The list could be extended for another 15 to 20 programs; all indicate that a variety of preschool experiences do indeed have immediate effects.

Evidence regarding the longer-range effects indicates that the effects of preschool can be enhanced or attenuated by subsequent experiences, although specific conditions that will most enhance development are not fully explored. As presented in Ryan (1972):

- Beller reported that throughout the first three grades of public school, children who attended the Head Start-like preschool retained their advantage over children who entered in kindergarten or first grade on measures of school achievement, school performance, and social adjustment.

- Fray found that while both experimental and control children were losing ground after four years of public school, the preschooled children (whose parents also received training in how to help their children) were doing somewhat better academically.

- Weikart also found evidence of better school achievement; in addition, more experimental (70%) than control children (50%) were in regular rather than special education at the end of the seventh grade.

- Deutsch, whose experimental children continued to attend an enriched program, reported higher scholastic achievement scores at the end of the sixth grade for the experimental than for the control youngsters.

- Sprigle's experimental children were achieving at grade level or above with a particularly strong showing for the youngsters who entered preschool at four years of age, in comparison to the below-grade-level achievement of children who attended traditional preschools.

The cross-sectional Westinghouse study (1969) found that children who participated in summer Head Starts did not have higher scores than non-preschool controls on tests of linguistic and academic achievement administered in the first, second and third grades. Similar results were found for full-year participants tested in the second and third grades, and on a self-concept test and teacher ratings of achievement motivation. Children tested in the fall after Head Start (i.e., first-graders who attended a Head Start kindergarten), black, and inner-city children had higher scores than their controls. A similar finding was reported in the Coleman et al. (1966) cross-sectional study.

In general, longitudinal studies with at-home controls show the effects of preschool experience most clearly. The typical pattern of levelling off of the accelerated rate of gain while the non-preschooled group "catches up" seems to be prevented when there is continuity of experience, provided by parent education, by very influential peer groups (Grotberg, 1972), and by direct program continuity as in the Head Start/Follow Through planned variation study. How essential a good preschool is, in contrast to a good primary school, and the relative merits of different approaches to continuity are among the currently unanswered questions.

2. Degree of Program Structure

Ways to describe and conceptualize differences among preschool curricula have proliferated almost as rapidly as the curricula themselves. Two broad approaches are (1) description of observed variation, regardless of program label, and (b) categorization of typing by program method, content, or objectives, or by the roles of teachers and children within the program.

Examples of the first approach include the Observer Rating Form developed for the 1966 Head Start evaluation by Pierce-Jones et al. (1966); the Observation of Structured Curriculum Input (OSCI) developed by Stern et al. (1969) for the 1967 and 1968 Head Start evaluations, the various forms of OScAR (Medley et al., 1968); and the interactional observation schema of Flanders (1970). Most of the observational forms have been used to describe classroom process rather than to predict classroom outcome. Despite the promise indicated by the reliability of many of these approaches, there is no direct evidence on the comparability of the domains assessed, and therefore few statements are possible about which factors or scales may be most valuable.

The second approach begins with hypotheses about how programs ought to cluster or what differences may be most important in affecting child development.

Bissell (1970) classifies programs by objectives, the ends to which the programs are directed, and strategies, the plan of action through which classroom activities are directed. Strategies translate into structure, "...a measure of the amount of external organization and sequencing of children's experiences" (p.3). Bissell identifies four types of programs:

The first type is the permissive-enrichment program, having multiple objectives oriented towards development of the "whole child." The strategy of these programs involves letting children's needs determine the activities of the preschool, with the teacher capitalizing on informal experiences for learning--a strategy which provides only low or moderate structure to children's experiences.

The second type is the structured-cognitive program, with objectives oriented towards the development of aptitudes and attitudes related to learning processes and with heavy emphasis on language growth. The strategies of these programs consist of the teacher directing activities in which the children participate, sometimes in prescribed ways and sometimes flexibly. The programs in this category range from moderate to high in degree of structure they give to children's experiences.

The third type is the structured-informational program with objectives oriented towards teaching specific information, particularly language patterns. The strategy of these programs involves the teacher directing activities and children participating in them in prescribed ways. The resultant structure in children's experiences is extremely high.

The fourth type of program is the structured-environment, having objectives oriented towards the development of learning processes. Some of these programs, like the Nimnicht and Meier "New Nursery School," have a heavy specific emphasis on language development, while others, such as traditional Montessori programs, do not. The strategy of these programs is in the form of self-instructing classroom materials and the teachers' mediation of child-material interactions. This strategy provides a moderate degree of structure to children's experiences. The degree of structure provided is considered to be moderate because while the self-instructing classroom materials direct and organize children's activities, the children's freedom to choose the materials they will work with provides an important flexibility.

Bussis and Chittenden (1970) categorize programs according to quadrants defined by the dimensions of high vs. low teacher initiation, control, and predictability; and high vs. low child initiation, control, and predictability. In general, the same programs are grouped together by most of the typologies.

The concept of structure is frequently identified as a significant dimension in comparing the relative effectiveness of different approaches. Although it is an oversimplification, it has been a useful one in relating program characteristics and their specific effects, and has also been a rallying cry of preschool educators who emphasize the open, free, playful nature of early childhood learning in contrast to those who emphasize the value of pre-planned, goal-directed, early achievement.

There has been considerable research interest in the relative merits and effectiveness of structured and unstructured preschool programs. Rusk (1968) compared the impact of a summer Head Start program using the Bereiter-Engelmann structured curriculum, with that of several less structured programs. On two aptitude measures the children in the structured groups made greater gains than those in the unstructured groups, but the differences were not statistically significant.

Erickson (1969) compared Head Start children assigned at random to traditional and Bereiter-Engelmann classes; children in the B-E classes outperformed the comparison children on the SB and on other measures. Studies of personal-social adjustment, parent attitudes, and teacher attitudes either showed no differences or showed differences favoring the B-E program.

In another study of a summer Head Start program, Espinosa (1968) found that highly structured reinforcement procedures, where children were systematically rewarded for achievement-oriented behaviors, were effective in fostering achievement motivation of Mexican-American and Negro children.

Bissell (1970) has performed a re-analysis of data from three earlier studies comparing structured and unstructured programs. One of these studies (Karnes, 1968) compared five full-year programs, one of which was directed by Merle Karnes. Three of these programs (Karnes Ameliorative; Bereiter-Engelmann; Montessori) were classified by Bissell as structured; the other two were unstructured programs. The second study re-analyzed by Bissell was the Di Lorenzo et al. (1969) evaluation of eight full-year programs in New York State. Four of the programs were traditional unstructured, while the remaining four were structured (two Bereiter-Engelmann programs; a structured, cognitively oriented nursery school; and a Montessori preschool). The third study in the re-analysis was a comparison by David Weikart of three full-year programs in Ypsilanti, Michigan, all directed by Weikart. Two programs were structured (Piagetian Cognitive; Bereiter-Engelmann) and the third was traditional unstructured.

After re-analyzing data from the three earlier studies, Bissell concluded that preschool programs that provide highly structured experiences for the disadvantaged children are, overall, more effective in producing cognitive benefits than less structured programs. However, she also noted an interaction with the children's socioeconomic level. The more advantaged of the lower-class children gained as much or more from unstructured programs, whereas the less disadvantaged of the lower-class children gained more from structured programs. The overall advantage of the more structured, cognitively-oriented programs may be of particular significance to the negative findings of the Westinghouse Impact Study, since most of the early Head Start programs were permissive and unstructured.

There is, however, evidence that early childhood education is more complicated than simply adopting B-E programs. Karnes' follow-up study (1969) showed a great loss in performance for B-E children who entered a regular second grade after two years in the program. Miller (1971) also reports that B-E children who entered either regular first grades or Bushell/behavior modification first grades did less well academically than children who attended "traditional" Head Start programs. Since "traditional" graduates also did better than DARCEE or Montessori graduates, previously unsuspected effect of child/teacher expectations regarding program objectives and strategies may be implicated rather than a unique "failure" of the highly structured, rote approach. It is possible, however, that the kind of learning achieved in structured-information programs does not generalize as well as the learning-how-to-learn heuristic advocated by educators such as Sprigle.

Thus, while the relationship of different classroom objectives and strategies remains among the most interesting questions in early education, longitudinal studies comparing transfer to different situations and development when the child continues to experience the same emphasis or approach are needed before any approach is widely adopted.

In a somewhat different vein, Stearns (1971) and others have identified many program modules, components, and materials that may be used successfully to reach specific developmental objectives. These could possibly be used to form a model or curriculum approach but are generally regarded as components of more eclectically designed programs. There is presently little data on consumer choice among modules or materials, how these are integrated to a program, or the longer-range issues of program continuity. The Head Start/ERIC literature offers many examples of language, quantitative, music, physical education, and other curriculum modules. The E&R centers (e.g., Hawaii, UCLA, MSU) and the centers comprising the National Laboratory for Early Childhood Development (NLECD) have been prolific, and many other modules and materials, including some developed from Sesame Street, are commercially available.

3. Teacher Effects

A question of direct relevance to the design and operation of Head Start programs relates to the selection, training, and methods of the teaching staff. It would clearly be of practical importance to know whether certain kinds of formal teacher education or in-service training contribute significantly to children's cognitive and affective growth. Similarly, it would be valuable to be able to relate specific teacher behaviors in the classroom to the children's learning outcomes. For these reasons, considerable research attention has been given to different teacher characteristics, and to the relationships between those characteristics and children's performance. A sizable number of these studies have been in the preschool age group (e.g., the summary by Chambers, 1971), and several have involved Head Start programs. The results to date have shown that there are, indeed, distinct differences in the teaching styles of different teachers, but there is relatively little clearcut evidence about the effects of those differences.

Research by Katz (1969) has shown there may be sizable differences between the stated intent of a particular program approach, and the way that program is actually implemented by Head Start teachers. Teachers in one study were supposed to express praise and approval for desired behaviors, and also to structure the classroom experiences in such a way as to elicit those behaviors. Some teachers implemented the structuring role but failed to praise the children when they behaved as desired; this was found to interfere with learning.

Grotberg (1969) has reported a study by Eisenberg in which it was found that teachers who were highly encouraging to young children produced less growth in IQ than teachers who gave only a moderate amount of encouragement. Also, teachers who placed heavy emphasis on self-confidence and self-concept development in children produced less IQ growth than teachers who were more moderate in this dimension. Finally, greater IQ growth was experienced by children whose teachers placed high value on intellectual activity and only moderate or low emphasis on property rights and care of materials.

Truax and Tatum (1966) found that the children's adjustment to the school setting, to the teacher, and to peers, may be improved by unconditional teacher warmth and support. The data from this research show that the more frequent the teacher-child interaction, the better the adjustment. Many of the children in this study were of higher socio-economic strata, however, so the results may not be entirely generalizable to more typical Head Start children.

Lamb, Ziller, and Maloney (1965) studied relationships between teachers' cognitive styles and Head Start children's self-esteem and self-other relationships. Using a special test, teachers were classified as abstract or concrete, and complex or less complex. Research results showed that students of abstract and complex teachers (as contrasted with concrete and less complex teachers) gained more in self-esteem, identified more closely with their mothers, and perceived themselves as similar to others.

In a study directed by Stern (1970), both cognitive and affective/social child measures were used to assess the effects of giving Head Start teachers feedback about children's performance and about interactions in their classrooms. No significant differences in children's performance were found between feedback and no-feedback conditions.

4. Parent Involvement

As noted by Hess, Bloch, Knowles, and Largay (1971), two of the most significant influences on efforts to involve parents in Head Start and similar intervention programs have been (1) the numerous publications attesting to the important effects of early experiences on later cognitive growth and academic achievement (Bloom, 1964) and general psychosocial development (Kagan and Moss, 1962), and (2) reports on the influence of home and maternal variables in determining the cognitive behavior of children (Bernstein, 1961; Coleman, 1966; Hess and Shipman, 1967).

Another important link in the theoretical and empirical support for parent involvement in the learner role stems from studies showing that lower-class and minority group parents tend to have different patterns of interaction with their children than do middle-class parents (Cazden, 1970; Hess, Shipman, Brophy, and Bear, 1968) and that the interaction techniques of the disadvantaged are associated with cognitive deficits on the part of their children (Hunt, 1971).

Hess et al. (1971) summarized compelling arguments for parent participation in early education programs:

> "It is contended that early experience affects subsequent intellectual and educational growth and achievement, and that children who grow up in homes disadvantaged by racial discrimination and poverty have a deficit of the experiences presumably essential for academic achievement in the public schools. Further, this deficit, which initially is the responsibility of the community, becomes cumulative during the pre-school and elementary school years. Therefore, compensatory programs should involve parents and assist them in providing a more adequate educational environment for their young children." (p. 265)

Hess notes that this line of reasoning is simplistic and inaccurate in some respects, but that nevertheless it has served to motivate and justify efforts to involve parents.

These theories and arguments, and many other variations developed in hundreds of articles over the past 20 years, have had a pronounced effect on Head Start policies, and to a substantial degree, on actual practices in Head Start programs across the country. Stern, Edwards, and Marshall (1970) point out that, "From its very inception, the Head Start program has maintained that parent participation must be an integral ingredient in successful intervention with preschool disadvantaged children. Not only are parents to be given job opportunities to advance their vocational skills, but they must become actively involved as educational agents with their own children." (p.1).

As clearly specified in the Head Start Policy Manual, parents must participate not only as learners but also in making decisions about the nature and operations of the program (e.g., through Center and Policy Committees, and Policy Councils). The Policy Manual also points out that translating policies into practice in local programs is the responsibility of Head Start Directors, staff, and parents at the local level. This necessarily means that there are considerable variations in the level and quality of parent involvement in different centers, depending on the enthusiasm and abilities of the Head Start personnel, the material resources available, the cooperativeness of the parents, and the general quality of relationships between the communities and the Head Start Centers. Furthermore, different programs may place different amounts of program emphasis on parent involvement, depending partly on the particular type of intervention model they may be following.

Most earlier studies of the effects of parents' involvement in programs such as Head Start have dealt with relatively small samples in one or two communities, and have recorded only short-term outcomes, usually those occurring during the Head Start year. Furthermore, the effects have usually been limited to children's cognitive performance. There are a number of relevant studies in Head Start or similar preschool programs that provide a useful background. As reported by Butler (1970), Janet Lee McCarthy investigated the effects of parent involvement on the language and intellectual activities of Head Start children and found that children whose parents participated in a home-visit role showed significant gains in language attitudes. A number of other experiments have also demonstrated the effectiveness of interventions that include training of parents to teach their own children (Weikart and Lambie, 1967; Gordon, 1970). At the UCLA Early Childhood Research Center, Stern and her associates have developed materials and procedures that Head Start parents can use to become more effective teachers of their children. In one study (Stern et al., 1968), significant improvement in language ability was demonstrated when parents used the materials at home, and there was a trend toward decreased parent feelings of alienation.

Parent involvement efforts have by no means produced uniform success, however. Attempts of psychologists and social workers to improve the child-rearing practices of poverty mothers through workshops, lectures, or counseling have usually failed to improve either mothers or children (Clarizio, 1968). Shaw and Rector (1968) have demonstrated that there may be little correspondence between the parents' enjoyment of the group experience and the benefits they derive in terms of their ability to improve their children's performance.

Although most studies of parent involvement have considered only the impact on the families concerned, a recent study by Kirschner Associates (1970) was addressed to changes occurring in educational and medical institutions in 58 communities having Head Start. The study found that Head Start Centers with high parent participation were highly involved in institutional change much more often than those with low parent participation. The parent involvement scale in this study included both the learner role and the decision-making role, but the two roles were not separately analyzed.

C. LONGITUDINAL STUDY BY EDUCATIONAL TESTING SERVICE (ETS)

This study was designed to help meet the need for better information about the long-term effects of the Head Start experience. It was initiated in the spring of 1967 as a cooperative venture of the Head Start Research Office and ETS. Four target communities were located, and school districts with a high proportion of low-income children were selected within those communities.

In each district an attempt was made to collect initial test data from all children in the age range of 3-1/2 to 4-1/2 years. These children are being followed through their school experiences to the end of the third grade; they are retested with a variety of measures at regular intervals to determine what changes have occurred in affective and social behavior as well as in cognitive and language development. The sample children are presently in the first grade.

The reports currently available (Educational Testing Service, 1968, 1969, 1970) include a major conceptual statement of the developmental theories around which the study is designed; a survey of available measures giving the rationale for measurement selection and development; a preliminary report on the characteristics of communities, families, and children in the 3-1/2 to 4-1/2 year old samples; a comprehensive report on the psychological status of the children during year one of the study; and a report (Emmerich, 1971) on changes in a variety of personal-social domains observed during Head Start (year two of the study). In subsequent reports, the progress of Head Start graduates through the early years of public school will be systematically monitored and compared with that of non-Head Start graduates in the same schools. Test, interview, and observational data will be related to characteristics of the children, the individual Head Start programs, and the schools.

D. THE HEAD START/FOLLOW THROUGH PLANNED VARIATION LONGITUDINAL STUDY

This on-going study, now in its third and final Head Start year, is conducted in conjunction with the evaluation by Stanford Research Institute (SRI) of Project Follow Through, a program that continues the comprehensive Head Start program in the elementary grades. The Head Start/Follow Through Planned Variation Longitudinal Study was initiated in 1969 with the following two primary objectives (Bissell, 1970, p.3):

- To assess the cumulative impact on participating children of a systematically coherent program from the preschool years through the early elementary school years.
- To compare the short-term and long-term effectiveness of the various program models.

The key feature of the Planned Variation Study is that it deals with the evaluation of well-defined programs that remain relatively constant in approach over a sufficient period to collect longitudinal data. Thus it is intended to avoid the problem encountered in many earlier studies, where the programs being evaluated had no dominant, cohesive methodology by which they could be easily characterized, and where those programs were changing so rapidly that few generalizations could be reached about any particular intervention model.

The intervention models being studied and contrasted are (1) the British infant school open classroom approach, a pragmatic action-oriented preschool model sponsored by the Education Development Center, (2) an academically-oriented preschool model sponsored by Engelmann and Becker, (3) the behavior analysis model developed and sponsored by Dr. Donald Bushell of the University of Kansas, (4) the Bank Street College model which takes a broadly developmental, "whole-child" approach, (5) the Florida parent-educator model developed and sponsored by Ira Gordon, (6) the Tucson early educational model developed by Marie Hughes and sponsored by the University of Arizona, (7) the responsive environment model designed and sponsored by Dr. Glen Nimnicht, (8) the cognitive model, developed and sponsored by Dr. David Weikart, (9) the pioneering environmental enrichment developed by Dr. Martin Deutsch, (10) the Pittsburgh individually sequenced academic curriculum sponsored by Dr. Lauren Resnick, (11) the Responsive Environment Corporation individually sequenced curriculum, and (12) the new enabler-consultant model developed by Dr. Jenny Klein of OCD during the study.

At present, results based on the Pilot Year I phase are available (Stanford Research Institute Interim Report, 1971). These results do not indicate an overall superiority of a single program approach over other approaches; they do, however, suggest that each program may be superior on a few, highly specific objectives for which that program was explicitly designed.

E. SPECIAL PURPOSE NATIONAL EVALUATION STUDIES

These studies, funded since 1968, have two purposes. One group of assessments is concerned with Head Start components on effects other than child development. Examples of this group are the study of the effects of Head Start on community institutions (Kirschner, 1970), the new comprehensive evaluation of the effects of parent participation in learner and decision-maker roles (in process, OCD) and an examination of career development and staff mobility, with particular emphasis on paraprofessional recruitment, training and effectiveness (in process). The second group of studies is related to Head Start sponsored experimental programs. Examples of this kind of national evaluation are the longitudinal study of the cost/effectiveness of Home Start, a home-based program delivering Head Start's medical, dental and health education services; and the study of the immediate and longer range impact of the Parent Child Centers and the seven new Parent Child-Advocacy Component Centers (in progress, OCD).

The special purpose national evaluation studies have evolved from the sixth major evaluation effort, funded between 1966 and 1969, which is described below. It is the purpose of this report and its supplement to analyze and interpret data collected by the evaluation centers supported during this period (1966-1969).

F. THE NATIONAL EVALUATION

In 1966, the Research and Evaluation Office of Project Head Start established a network of Evaluation and Research (E&R) Centers to carry out a national evaluation of the Head Start program on a sampling basis. These evaluations were conducted in 1966-67, 1967-68, and 1968-69. They were designed jointly by the Head Start National Research and Evaluation staff, the Head Start Research and Evaluation Advisory Council, and the Directors of the Head Start E&R Centers. The E&R Centers were primarily responsible for new instrument development and for collection of common evaluation data. In addition, each E&R Center planned and carried out individual evaluation and research studies. The present analysis by System Development Corporation is concerned only with the "common core" data. The results of the individual E&R Centers are described in separate reports by the respective Centers. (For a listing of Centers and Directors, and of reports on several of the 1968-69 projects see Appendix A.) The design and measures used in the E&R Center effort are described in Chapters III, IV, and V.

CHAPTER III
DESIGNS OF THE THREE YEAR'S EVALUATIONS

The three years of the National Evaluation (1966-67, 1967-68, and 1968-69) represent three separate and distinct studies, not replications of the same basic study. The evaluation design for the three years differed in several important respects:

- Data collection instruments changed as new instruments developed, and unwieldy or unreliable instruments were rejected. In particular, more social-affective measures were added, and direct observation techniques were used to augment or replace questionnaires.

- Guidelines for sampling the Head Start children and programs were changed to reflect increasing knowledge about child and program characteristics, and increasing research sophistication.

- Whereas the 1966-67 and 1967-68 studies depended on natural variations among selected programs, the 1968-69 study employed a planned-variations approach with carefully specified intervention models.

These inter-year differences, described in greater detail in the following paragraphs, mean that each year's data must be treated in separate analyses, not combined into a single pool of data. This does not, however, preclude comparisons across years to see if there were commonalities or differences in the patterns of child-program interaction effects.

A. 1966-67 EVALUATION

Thirteen Evaluation and Research (E&R) Centers were responsible for the 1966-67 data collection effort. E&R Center Directors were initially requested to select Head Start Centers which were, in the opinion of the Directors, "representative of important subpopulations and of Centers whose programs are interesting from educational, research, or other points of view."

Two instruments, the Family Information Form and the Parent Activities Form, were administered pre and post to collect data on the children's parents and families. The former instrument contained questions about family structure, income, occupational characteristics, and parents' education. The Parent Activities Form asked Center Directors and teachers about the parents' extent of involvement in Head Start activities over a selected one-month period.

Information on the Head Start teachers was collected by a Staff Member Information Form and an Observer Rating Form (ORF). Questions in the Staff Member Information Form were asked of the head teacher and the assistant teacher or aide. They included information about the teacher's education, work experience, and preservice training. The ORF required descriptive ratings of both teachers and aides, based on classroom observations by trained observers.

A Center Facilities and Resources Inventory was used to collect data on the physical characteristics of the Head Start Centers' facilities and programs. It also contained questions about the Center Director's attitudes regarding intervention education programs for disadvantaged children.

Child performance and behavior measures administered pre and post included the Stanford-Binet Test of Mental Ability, the Preschool Inventory (designed specifically for Head Start) and the Head Start Behavior Inventory, on which each child's teacher rated certain social and emotional characteristics of the child.

B. 1967-68 EVALUATION

In this year, as in the previous year, the evaluation design involved selection of Head Start Centers with distinctive child or program characteristics. This selection was at least partially determined by geographic proximity to the E&R Centers, since extensive classroom observation was required. Since at least one E&R Center was located in each of the seven Head Start Regions, the sample was nationally distributed. Although it was not randomly selected, it did include substantial variations on dimensions such as urban/rural, north/south, younger and older children, etc.

The array of data collection instruments for 1967-68 differed somewhat from that for 1966-67, and the detailed content and arrangement of items were often different even when the names of the instruments were similar for the two years. For example, in 1967-68 a Family Interview form administered pre and post combined many elements of the 1966-67 Family Information Form and the Parent Activities Form. The new instrument provided three kinds of data: (1) demographic, such as the mother's age and education, (2) behavioral, such as the mother's participation in community and Head Start activities, and items intended to provide an index of the child's emotional maturity at home, and (3) dynamic and process factors such as the mother's reported mode of control over the child, her aspirations and expectations for his development and her attitudes of optimism, alienation, and hopelessness.

Background information about the Head Start teachers, their education, training, and experience, was collected by a Characteristics of Teaching Staff form. Another form, Description of Center and Classroom Composition, combined information about the ethnic, sex, and age distributions of children in the classes.

Pre and post measures of the children's performance and behavior were collected by three instruments, the Stanford-Binet, the Inventory of Factors Affecting Test Performance (FATP), and the Social Interaction Observation Procedure (SIOP). The FATP is a rating scale completed by the Stanford-Binet examiner, describing attitudinal and emotional factors that might have contributed to, or affected the child's Binet performance. The SIOP, developed at the University of Kansas, records the rate and content of peer and adult social initiations and responses for a 45-minute free-play observation period for each child.

Another new measure added in 1967-68 was the Observation of Substantive Curricular Input (OSCI), developed at UCLA (Stern, 1969). The OSCI is completed by an observer who records the on-going activities of the class during sample days. The form permits classification of observations by such questions as: Do teachers or children control activities? What proportion of the time is spent in free play? In activities developing small muscle skills? In activities developing language skills? In whole-group activities? In small groups?

C. 1968-69 EVALUATION

A major change was made in the 1968-69 evaluation effort to help ensure that the evaluation sample would include sufficiently varied programs of well-defined characteristics. Each of the E&R Center Directors was asked either to identify a reasonably assured natural variation, or to propose a direct intervention. Centers introducing new variations were directly responsible for training the staff or for actually carrying out the programs. Centers also included non-intervention "regular" Head Start companion classes in their samples, and each Center conducted its own study of the effectiveness of its own intervention approach.

The designs of the intervention studies conducted by the E&R Centers were as follows:

- Boston University--Parent Involvement

  This intervention model was concerned with the effects of parent involvement on Head Start classroom activities and on the children's development. The Boston University E&R Center staff were participant-observers in shaping the South End (SNAP) program through a partnership of community, CAP, and University members.

  One vehicle for this "comprehensive program" for self-determination was sustained feedback to the teachers and the community on the behavior of children and teachers in classroom situations. The success of the program was defined by (1) changes in teacher behavior which were reflected in (2) changes in community behavior, which were in turn reflected in (3) the behavior of children in classroom and test situations.

- Syracuse University--Study of Teacher Praise/Blame Communications

  From an earlier Head Start analysis, it was indicated that with Negro teachers, Negro children showed substantial cognitive gains, while white children gained equally well with Negro or white teachers. The Syracuse E&R Center explored a high probability explanatory mechanism for this result: differential praise/blame communication by the teacher.

  Syracuse observers recorded the frequency of the occasion for praise/blame communication of Negro and white teachers to children in Head Start classes; analyses included studies of (1) "ignored" and "spotlighted" behaviors by child sex, age, and ethnic group, and (2) the relationship of these behaviors and teacher's response to them to the child's social-emotional and cognitive development.

  The Syracuse study did not attempt to "make something happen." Rather, it recorded one aspect of that which occurred and related this to both the common core measures and to measures of child's self-image.

- Temple University--Study of Equipment and Facilities

  The opportunities and limitations imposed by variations in the physical environment were the foci of the Temple University intervention study. Staff members surveyed a number of Head Start classes and recorded the quantity of equipment and other resources presumably stimulating to children's intellectual development, e.g., toys, crayons, chalk, plaground equipment, etc. A number of sparsely equipped centers were selected for further study, and half of those centers were provided with supplementary equipment believed to be relevant to certain selected aspects of cognitive development. The extent to which children used the added equipment was observed, and performance measures of the children were compared for "enriched" and for "sparse" classes.

- University of Hawaii and Southern University--Parent Participation as Learners

  The two universities explored two approaches to developing the parents' skills as participants in child dvelopment: training in techniques specific to a relatively detailed goal (language development), and a broad program to increase parents' competence in child-rearing. Interwoven in this study was a second question: What was the impact on the child's language, cognitive, and social-emotional development of regular task-structured small-group experience? Still a third question was the effectiveness of the University of Hawaii Research Language Curriculum when taught by trained tutors instead of the regular classroom teacher for children with different, but relatively severe handicaps vis-a-vis "standard" English.

- Michigan State University--Study of Conceptual Development

  This study was concerned with methods of measuring and developing the ability of young children from low-income families to perform functions of discrimination, attention, and classification. The development of three groups of children were compared: (1) those provided with classification, discrimination, and attention "developing" experiences in a sequence derived from such theories as Piaget's, (2) those provided with the same experiences in a random sequence (a control for exposure to the materials per se), and (3) those who had not had access to the materials and to regular training.

Head Start eligible teachers hired and trained by MSU visited the sample classes daily to provide cognitive tutoring.

- University of Kansas--Study of Social-Emotional Development

  This intervention study was concerned with the effects on children's social development of applying behavior modification techniques. Behavior modification substitutes desired for undesired responses through a technique which involves application of learning and reinforcement principles to elicit and sustain the desired responses.

  During 1968-69, this Center compared the social development of Head Start children in classes whose teachers received behavior modification training with the socialization of children in comparison classes. This involved a refocusing of techniques and objectives for the behavior modification classes; it was designed to provide the parent with a direct input to the Head Start program as it affected her child.

- South Carolina, Texas, and Tulane--Language Intervention Study

  This cluster of E&R Centers collaborated in a language intervention study. The study examined the effectiveness of the packaged Buchanan Language Readiness Program for (a) standard English-speaking children and (b) children who speak deep Southern, Mexican, and Indian dialects.

  The study also attempted to determine how much the program's effectiveness could be increased by teacher training; by intensive monitoring; by a specially developed supplementary package designed to deepen the child's skills in the areas identified by the "standard" Buchanan program; and by introducing the factor of tangible immediate reward for accomplishment and completion.

- Bank Street College--Study of Unstructured, "Open" Classes

  This study was concerned with the effects of an unstructured approach that relied on the teachers to provide spontaneous opportunities for the children to satisfy their curiosity and to exercise their perceptiveness. Emphasis was placed on the use of varied and readily accessible materials and on devices such as the use of symbols rather than letters to develop transitions from one cognitive level to another.

- University of California at Los Angeles--Teacher Attitudes and Goals

  This study explored the integration of evaluation and "education" by providing much information to the teachers on the rationale and findings (in a general sense) of the full year evaluation as it proceeded. The staff compared two evaluation conditions; one in which little information was provided to the teacher and one in which there was considerable information given by UCLA on generally observed classroom practices, on individual teacher style, and on each child's pre-status and subsequent development. Changes in the teacher's educational goals and in her attitude toward evaluation were recorded.

In addition to the introduction of the intervention approach, the 1968-69 evaluation differed from the preceding two years in that a larger number and variety of instruments were employed. In particular, an effort was made to obtain better measures of social-affective behavior and of teacher interactions with the children. All measures for 1968-69 are described in Chapter V.

CHAPTER IV
LIMITATIONS IN THE STUDIES

Before describing any details of the evaluation for 1968-69, it is important to note several general factors that have significance for analysis and interpretation of the data for all three years.

A. QUASI-EXPERIMENTAL NATURE OF THE EVALUATION

First, the evaluation effort, especially for 1966-67 and 1967-68, represents a quasi-experimental design, rather than a true experiment. In a true experiment, hypotheses are explicitly stated in advance and the conditions of data collection are arranged to permit rigorous testing of those hypotheses. These conditions typically include the random assignment of subjects to treatment conditions and/or the use of matched comparison groups, so that differences in performance can be meaningfully ascribed to the treatment variables in question rather than to artifacts in the assignment process. Furthermore, if results of the experiment are to be generalized to a population (e.g., all Head Start children), a stratified sampling technique or other such procedure is used to insure that the subjects included in the study are truly representative of that population.

The Head Start National Evaluation evolved from a background of implicit hypotheses based on numerous earlier studies of early child development and of the effects of different intervention techniques (a number of such studies are discussed in Chapter II). These earlier studies were influential in shaping the National Evaluation study. They suggested certain program approaches that should be included in the design, certain performance instruments that should be used, and certain relationships between program variables and performance measures that should be explored. Thus the selection and design of instruments and the data-collection procedures for the National Evaluation were broadly guided by a substratum of earlier theory and research findings. In 1968-69, the introduction of more explicitly defined intervention strategies (as described in Chapter III) provided greater structure to the evaluation and helped clarify some of the major dimensions of the programs being assessed. The individual intervention studies performed by the E&R Centers in 1968-69 had many of the attributes of true experiments, including comparisons between Head Start classes with and without the special interventions. Even in that year, however, there were certain design limitations that must be considered in interpreting the common core data across all the sample sites. For example, children were in some cases not randomly assigned to treatment conditions, and programs (i.e., centers and classes) were not selected randomly from the total population of Head Start centers. The sampling guidelines were somewhat different from year to year, but in none of the three years was it claimed that the sample of programs or children was, in any rigorous sense, representative of the total Head Start program.

One effect of the non-random assignment of children to treatment conditions is that program effects may be confounded with differences in the children's entry characteristics. As an example, centers using a certain type of program approach might also have older children or children of higher socio-economic levels than other centers.

These design considerations may somewhat restrict the generalizability of research findings, but they do not negate the value of the National Evaluation. Quasi-experiments can produce highly useful results for formative evaluation efforts such as the present study, that is, for evaluation aimed at systematic program assessment and improvement. Although it cannot be assumed that the findings are necessarily representative of Head Start in general, it can be stated that, for the types of children and programs in the E&R Center samples, certain program features were associated with greater benefits than others for certain kinds of children. The confounding of program variables and children's entry characteristics can be somewhat offset by statistical procedures such as the use of control variables to adjust children's performance measures for pretest differences, and the use of separate analyses of variance for different subgroups of children. Thus the results, though not meeting all the formal requirements of a rigorously controlled experiment, can have considerable practical utility.

B. LACK OF NON-HEAD START CONTROL GROUP

The second important design feature of the National Evaluation is that it did not include a control group of children who had no exposure to Head Start. This does not interfere too seriously with the major study objective, which is to draw comparisons among different Head Start approaches. It does mean, however, that there is no suitable baseline against which the measures of overall Head Start gains can be compared. Even in the most rigorously controlled experiment, cause-and-effect relationships can only be inferred; without a non-Head Start control group, these inferences are particularly difficult to substantiate. For this reason, in the analyses reported here, the Head Start experiences will be described as "associated with" certain changes in performance, rather than as having caused those changes.

C. VARIATIONS IN PRETEST TIME AND PRE-POST INTERVAL

It was originally planned that all children would be given pretests and posttests in the cognitive and social-affective domains at least four months apart, but a number of administrative and logistical problems caused substantial deviation from this design in 1966-67. Although the average pre-post interval was over four months, a number of centers ran well under this figure. Contributing to the deviation was the fact that three of the ten E&R Centers were not funded until early 1967. Thus the E&R Centers and the Head Start classes did not necessarily begin together. In most cases children were enrolled for several months before they were first tested.

In some centers, records on the actual dates of initial testing were not uniformly maintained. No records were kept on individual children's attendance, and the data on number of weeks of the centers' operations were in many cases only approximate. In addition, there was some confounding of E&R Centers (and thus geographic region) with weeks of Head Start centers operation at time of initial testing.

Many of these same data-collection problems still existed in 1967-68. There were still deviations from stated guidelines, pre-post test intervals still varied, and the recording of critical data was not always reliable. These discrepancies were less severe than in 1966-67, however, because the operational programs and the evaluation procedures had become somewhat better controlled as the initial flurry of new program starts slowed down.

By 1968-69 the pretest and posttest periods were fairly well standardized, but there were still some variations. For this reason, the children's attendance level is one of the variables examined in the present study in relation to performance gains.

D. MISSING DATA

For most of the variables, there are substantial quantities of missing data. The number of missing cases differs from one variable to another; for example, there are approximately two hundred missing cases on the Stanford-Binet pretest, and about twice that number on the Caldwell-Soule PSI. On several of the parent attitude measures, data are missing for almost half the original sample. The number of missing cases is further increased when gain scores are considered, because these gains are calculated on only the children for whom there are both pretests and posttests on a given measure.

Caution must be taken in interpreting all of the analyses of program "effects," and of differences between subgroups of children, because of the possibility that the children whose data are missing might have shown different results than the children used in the statistical analyses. Furthermore, the missing data could conceivably have introduced a differential bias into the findings for different program approaches. It was not feasible in the present study to perform an in-depth analysis of the missing-data children. However, in Chapter IX, a comparison is made, for several performance variables, on the mean pretest scores for all children having data on those variables, vs. the mean pretest scores for only those children having both pretest and posttest scores. This provides an opportunity to gauge the extent of possible bias introduced into the analyses by eliminating children who have one score on a measure (usually the pretest score), but who lack the other score on that same measure.

CHAPTER V

MEASURES FOR 1968-69 ANALYSIS

This chapter describes the instruments used in the 1968-69 evaluation, and the variables derived from data elements contained in those instruments.

A. INSTRUMENTS

The data collection instruments used in 1968-69 can be classified under three major headings:

- Instruments designed to record data on the background and performance of the Head Start children.
- Instruments pertaining to the children's parents and families.
- Instruments pertaining to the Head Start Centers and classes.

1. Instruments Pertaining to Children

Instruments designed to measure cognitive growth included the Stanford-Binet Intelligence Test, the Caldwell-Soule Preschool Inventory, and the Animal House subtest of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI).

The Stanford-Binet is a well-known measure of overall cognitive development, and has been found in numerous studies to be generally predictive of school success. The version in this evaluation was the Terman and Merrill 1961 scale.

The Caldwell-Soule Preschool Inventory used in 1968-69 was a revised and shortened version of the instrument used in the 1966-67 national evaluation. This instrument is designed as a brief assessment and screening procedure for individual use with children from three to six years old. It was developed to provide a measure of achievement in areas considered essential for school success. A specific goal in the construction of the Caldwell-Soule was to provide a test that would be highly sensitive to experience, and would thus reflect the impact of educational intervention.

According to the test manual, the Animal House is designed "to measure ability to learn new things," rather than to measure previously gained knowledge. It requires the child to perform a simple categorization task.

Several of the instruments used fall into the affective/social-emotional domain. One of these, the Sociometric Picture Play Board, was developed at Michigan State University, and used mid and post to obtain "popularity" indices for different children in several play situations. On this instrument the child selects, from an array of pictures of his classmates, the person with whom he would like to play. The results can be analyzed to study group dynamics among classmates.

Another measure introduced in the 1968-69 study was the Gumpgookies (Adkins and Ballif, 1970), developed at the University of Hawaii and used pre and post to determine the children's achievement motivation. This is a projective technique in which the child indicates which of two cartoon-like figures is "his" Gumpgookie; for example, the Gumpgookie going out to play or the Gumpgookie painting a picture. The more task-oriented responses are considered to show higher achievement motivation.

A modification of the Hertzig-Birch (hereafter referred to as "the Birch") system of describing response styles was used as an index of the affective component of cognitive behavior. This is a system for describing the way in which a child responds to a Stanford-Binet test item. For example, he can pass an item by doing only what is required (delimitation) or by doing something more than is required (spontaneous extension). He can fail an item by doing the task but doing it incorrectly (work response), or by not attempting to do the task at all (non-work response). He can make a response verbally or non-verbally. The full scoring system and definitions for the Birch system are described in Hertzig et al. (1968).

After completing the Binet with the Birch response procedure, the examiner filled in the Inventory of Factors Affecting Test Performance. This rating scale indicates the degree to which attitudinal and emotional factors might have impaired the child's Binet performance; it also provides a measure of each child's ability to adapt to the test conditions.

The data from these instruments, date of enrollment and record of attendance, as well as other pertinent information such as a record of all measures for each child, were entered on the Master Data Cards and Supplementary Data Cards.

2. Instrument Pertaining to Parents and Families

Pre and post data on the parents and families were collected on a Parent Interview form that was similar but not identical to one used in 1967-68. Three kinds of data were obtained: (1) demographic, such as age and education of parents and siblings; (2) behavioral, such as mother's participation in community and Head Start activities, and (3) dynamic and process factors, such as mother's reported mode of control over the child, her aspirations and expectations for his development, and her attitudes of optimism, alienation, and hopelessness.

3. Instruments Pertaining to Programs

Several forms were used to collect information about the classrooms. The Class Register form included information about the class composition, the Characteristics of Teaching Staff contained items about the teachers and aides, and the Classroom Facilities and Resources Inventory described in great detail the physical aspects of the learning environment.

Instruments used to obtain more dynamic and interactive data about the programs were the Classroom Observation of Substantive Curricular Input (OSCI), the Post-Observation of the Teacher (P.O.T.), the Post-Program Interview with Teacher (PPIWT), and the Checklist of Administrative Variables. The OSCI, developed by UCLA, is a time-sampling observation of the on-going activities of the class, and provides information on such questions as: Do teachers or children control activities? What proportion of the time is spent in free play? In activities developing small-muscle skill? In activities developing language skills? In whole-group activities? In small groups?

The P.O.T. inventory was filled in after each observation with the OSCI. It includes several categories of information about the teacher's classroom behavior that were felt by the Evaluation and Research Centers to be important for child development.

The PPIWT was administered after the end of the program year to provide an index of the extent to which the procedures specific to a particular E&R Center's intervention design occurred "spontaneously" in other Centers. The instrument was designed to provide a teacher-reported inventory of program features (curriculum, teacher training and attitudes, parent participation, etc.), which provided the operational definition of the experimental treatment.

The Checklist of Administrative Variables was completed after the evaluation program by the classroom teacher. It was used to determine who made various administrative decisions involved in the conduct of the various components of the Head Start programs (e.g., selection of children, evaluation of teacher training, planning of parent meetings). For each decision, two questions were asked: (1) Was the activity undertaken? and (2) Who participated in making decisions about the activity (e.g., administrators, teachers, parents, etc.)?

B. PROCEDURES FOR DEFINING VARIABLES

An important process in the development of the data base for the analysis of the 1968-69 data was the organization of large quantities of data elements from the many instruments into meaningful program variables, child variables, and parent variables. This organization required three basic steps:

- Reorganization of data elements by child.
- Recoding of data at item level.
- Definition of variables in terms of data elements.

1. Reorganization of Data Elements by Child

The Head Start common core data were originally organized by data collection instrument. In order to associate each child with the program variables that applied to that child, new tapes were produced in which the data were organized by child. That is, children were listed by center, class, and ID number, and after each child's ID number was listed all the relevant information pertaining to that child. This included not only personal information about the child (age, ethnicity, etc.), his family, and his performance on various instruments, but also detailed information about the class and center that the child was enrolled in. Thus all data about a teacher, for example, were included in the data associated with every child in that teacher's class. The child-oriented data linkage made it possible in subsequent statistical manipulations to relate program variables and performance measures for children of designated characteristics.

2. Recoding of Data at Item Level

Data items were not originally coded in a consistent manner. In some items, for example, the largest quantity on some dimension (e.g., frequency of parent meetings) would be given the highest scale value. For other items the largest quantity might have the lowest value. In still other cases, an item response which logically represented an intermediate value, had the highest or lowest value. A large percentage of the items had to be recoded so that the assigned values represented a more logical scale. In general, an attempt was made to scale items so that a high value meant a large quantity, a high rating, or a desirable outcome.

It was also necessary, for each individual item, to decide on the handling of "data missing" and "no response" designations. These decisions were made by senior project personnel with guidance from project consultants. In most cases, children with "data missing" or "no response" on a particular item were simply eliminated from the calculation of mean values, etc., for that item. In a few cases, however, it was felt that "no response" should be given a specific interpretation. An example of this latter situation is an item from the Post Program Interview with Teacher, asking about methods used to encourage parent participation; for this item, lack of a response was given the same scale value as a response of "none".

3. Defining of Variables in Terms of Data Elements

This step was accomplished by a combination of rational (i.e., face validity) and statistical analyses. Senior staff members and consultants with extensive experience in Head Start evaluations worked together to select the most vital elements, and to decide which elements should be combined to form new derived variables. In addition, project members corresponded with the developers of some of the instruments to obtain further information about coding of items, prior attempts to develop factor scores or subscores, standardization scales, etc.

For several of the instruments, frequency distributions were generated from the computer tapes to determine how items should be coded, and which items had such extensive missing data that they should be eliminated from further consideration. Additional statistical analyses were performed on the Parent Interview and the Post Observation of Teacher rating scale; the results of these analyses were used in conjunction with rational analyses by project members and consultants to define new composite variables. Other variables were based on factors previously developed for the instruments by other investigators (e.g., the 12 factors for the Observation of Substantive Curriculum Input, or OSCI).

In some cases, a variable consisted of a single item, but more often a formula was used to compute new variables, each based on the values for several items. Often the formula involved calculation of the total or mean of scaled values for several items, but in several instances the computations were considerably more complex. The creation of the formulae, or definitions, was necessarily a judgmental process.

After all variables were defined, the definitions were incorporated into computer programs which extracted the necessary information from the data tapes and produced a new tape containing, for each child, values for all of the derived variables. This new tape, designated the Master Tape, was the basis for all statistical manipulations of the data. Furthermore, it includes data on many variables which were not actually used in the analyses of variance for the present study, but which might be of interest to other researchers for future analyses of the 1968-69 data. A copy of the Master Tape, and of codebooks describing the composition and format of data on that tape, will be made available to the Project Head Start central office.

C. INITIAL SET OF VARIABLES

By the steps described above, an initial set of 203 variables was defined. Of this set, 113 variables were categorized as "child-oriented" variables; that is, they were derived from records associated with individual children. These include the types of information described below:

1. Child-Oriented Variables

a. Child Personal and Background Data

Examples of this type of information are the child's sex, ethnicity, age, educational opportunities in the home, area of residence (South/Non-South), and amount of prior preschool experience. These variables were selected because it was felt of interest to provide descriptive data on the Head Start children at time of entry into the program, as well as to compare performance gains for different subgroups of children.

b. Child's Family

Examples of these variables are mother's and father's education level and occupation, socio-economic status (a composite measure), number of adults in the home, number of children in the home, number of children presently in Head Start, and number of children previously in Head Start. Additional variables in this group include the modes of physical and psychological controls used by the parents on their children (e.g., use of praise, use of physical punishment, etc.). The selection of these variables was based on interest in the family origins and environment of the Head Start children, and in the possible relationships between these family variables and the children's gains in Head Start.

c. Timing of Instrument Administration and Period of Head Start Program's Influence

These variables include the interval between the start of the school year and the pretest administration of each instrument; the pretest-posttest interval; and the number of days actually attended by the child prior to the pretest, as recorded by the teacher. These variables were potentially of interest for their use in determining how the children's performance varied with their period of exposure to the program and with the timing of the tests.

d. Performance Measures on all Cognitive and Social-Affective Instruments Administered to the Children

These include both prescores and postscores on each child-oriented instrument described above in Section A (except for the Sociometric instrument, which involved a midtest and posttest). Some of the scores were already available in the form of standardized or age-normed scores (e.g., the IQ score for the Stanford-Binet). Others were converted into age-normed scores by use of norming tables (e.g., the Caldwell-Soule Preschool Inventory), while still others were left un-normed (e.g., the Birch).

Most of these child performance measures are defined in greater detail, and the rationale for their selection is described in Section D, below.

e. Variables Relating to the Parents' Attitudes

These include data on the parents' aspirations and expectations for their children's subsequent educational and occupational attainments; their sense of hope vs. alienation; their feeling of personal power (or lack of it); their degree of involvement in Head Start and community activities; and their attitudes toward Head Start and toward education in general.

One reason for interest in these variables was their value in describing the entering characteristics of the parents. Another reason was that some of the variables might profitably be used as dependent variables, to determine whether Head Start experience was associated with beneficial changes in the parent attitudes.

2. Program-Oriented Variables

Another set of variables can be characterized as program-oriented. These 90 variables were derived from instruments maintained by site or class rather than by individual child. The program-oriented variables as a group are vital to this study, because they represent the independent variables whose relationships with the performance measures are to be investigated. In the following discussion, they are organized into several categories of information; the discussion includes examples of variables in each category, and a rationale for selection of the category.

a. Teacher's Personal and Background Variables

It is clearly important to Head Start to know whether it should hire well educated and highly experienced teachers, and whether those teachers should receive special training in Head Start and similar operations.

Similarly, it would be useful to know what can be accomplished by less educated teachers and aides, e.g., persons who might be recruited from the disadvantaged communities. Therefore, this category includes not only personal information such as the teachers (or aide's) age, sex, and ethnicity, but also background data such as her level of general education, educational training in early childhood, general teacher training, training for one of the special Head Start programs; paid teaching experience with young disadvantaged children; with older advantaged children; with young advantaged children; etc.

b. Teacher Dynamics/Behavior

These variables all relate to what the teacher does in the classroom, and tend to focus on her personal teaching style as opposed to more institutionalized or programmatic behaviors. They include such things as two factor scores from the Post-Observation of the Teacher related to the teacher's quality of cognitive input, and concern for the individual child; and several variables from the PPIWT, such as mode of psychological and/or physical control of the children (e.g., use of praise, use of punishment).

The relevance of these variables to the study is apparent. There have been few reported studies in Head Start of whether specific types of teacher behavior are related to specific dimensions of child performance or parent attitudes; yet such relationships, if demonstrated to hold consistently across many different programs, could aid in subsequent training of Head Start staffs.

c. Program/Curriculum Variables

These variables are also somewhat concerned with reported teacher behavior. Unlike the preceding category, however, they tend to reflect a more conscious and institutional commitment to a certain style of program emphasis or approach, rather than a purely personal style on the part of individual teachers. An examination of these variables may be valuable in making judgments about what kinds of program orientation should receive greatest emphasis in future Head Start programs. One major group of variables in this category consists of 12 factors from the Observation of Substantive Curriculum Input (OSCI); these include observed classroom interactions such as creative arts instruction, large-group structured lessons, language and discrimination learning, routines, verbal communications, and social-emotional interactions. Another group of variables, derived from the Post-Program Interview with Teacher (PPIWT), characterizes the individual programs as placing emphasis on language programs, math programs, child socialization, independence and self-care, etc., and also indicates whether they are child-centered or task-centered. Other variables from the PPIWT specify whether the programs use certain language or quantitative program packages, and describe certain characteristics of the class composition, e.g., its ethnic composition, ethnic homogeneity, and teacher-class ethnicity match.

d. Materials and Equipment

A practical question for Head Start decision makers is how much importance should be placed on the physical and material resources of the individual programs. Does the quality and quantity of such resources have any significant relationship to the program's ability to meet its goals? Are there particular kinds of equipment that seem especially important? Variables that might help to answer these questions include data from the Classroom Facilities and Resources Inventory on physical areas such as special cognitive activity areas, creative activity areas, child development and social activity areas, and outdoor play areas. Other relevant variables include the amount and condition of equipment to exercise large muscles, and the amount of dramatic and creative arts material, cognitive material, and sensory-motor material. Finally, an overall composite index of quality of facilities was computed; this index was based on over 20 items describing different aspects of the physical plant and resources in that plant.

D. CORRELATIONAL ANALYSES OF INITIAL SET OF VARIABLES

After the initial set of 203 variables was defined, a strategy was needed for selecting an optimal subset of those variables for more intensive study using analysis-of-variance techniques. It was clear that the scope of the study would not permit an in-depth analysis of more than a fraction of all possible combinations of program, child, parent, and performance variables; the problem was, how should the research questions be formulated, and the most important variables selected? One possible approach would have been to generate hypotheses based on theory or on the results of prior research. This was rejected as the primary means of hypothesis generation, because experience in previous studies indicates that a large percentage of hypotheses thus identified will yield "no significant differences," and such findings usually provide little useful information. It was felt important to provide clues about the most potent variables (i.e., the strongest relationships between program variables and dependent variables) before the final selection was made for the more costly formal analysis.

The major method selected for this screening process was a correlational analysis approach which permits examination of large numbers of variables at relatively low cost. In this approach, for each dependent variable, the Pearson product-moment correlation was computed between the pretest scores and each program variable. Next, the correlation was computed between the posttest scores and each program variable. The differences between these two correlations were computed and a "t" test developed by Hotelling (1940) was performed on each difference to test the hypothesis of "no difference." The probabilities of differences as large as or larger than the observed differences were computed. A correlation increase was interpreted as suggestive of a positive (beneficial) relationship between the program variable and the performance measure, and a decrease as a negative relationship.

The correlational approach used here was similar to one used by Woodrow (1939) and discussed by Bereiter (1963). Although Bereiter feels that the correlation approach suffers from potential attenuation discrepancies brought on by differential measurement errors in the pretest as compared with the posttest, these discrepancies do not appear sufficiently serious to vitiate the technique's value as a preliminary screening procedure in a search for clues concerning important program impacts.

Tables 2 through 18 show the most important findings from the correlational analyses, which involved approximately 80 independent variables and 18 dependent variables[1] (child and parent measures). Each table shows results for one dependent variable. Table 2, for example, shows results of the correlational analysis for the Stanford-Binet. The left-most column lists all program variables that showed pre-post correlation differences having probabilities of .05 or less. From left to right, the remaining columns show the correlation between the program variables and the pretest IQ scores; the correlations

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[1] For brief descriptions of all program variables listed in the correlation tables, see the separately enclosed Glossary of Program Variables.

Table 2

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON STANFORD-BINET

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Emph. on Indep. & Self-Care (IND-SELF)	-0.026	0.038	0.064**
Parent-Centered Program (PARNTCNT)	0.065	0.002	-0.063**
Staff Size (Effective[1]) (EFSTFSZE)	0.076	0.019	-0.057**
Pupil/Teacher (Effective[1]) Ratio (PUPLEFTR)	-0.015	0.039	0.054**
Amt. of Cognitive Mater. (COGNMATL)	-0.008	0.051	0.059**
Child-Centered Program (CHLDCEN)	0.138	0.083	-0.055**
Task-Centered Program (TASKCEN)	-0.115	-0.061	0.053**
Teacher's Pd. Exper. in Head Start (PDEXHS)	-0.092	-0.042	0.050*
Large-Muscle Equipment (MUSCLEQP)	0.032	0.083	0.051*
Teacher's General Educ. Prep. (TGEDPREP)	0.250	0.203	-0.047*
Special Cognitive Activ. Area (SPCLCOGA)	0.027	-0.021	-0.048*
Structured Lessons (OCLSGRP)	0.019	0.061	0.042*

[1] Contribution of each teacher is weighted according to months of teacher's participation during evaluation period.

* Designates a corr. diff. with prob. less than .05

** Designates a corr. diff. with prob. less than .01

Table 3

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON CALDWELL-SOULE PSI

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Special Creative Activ. Areas (SPCLCREA)	0.130	0.046	-0.084**
Teacher's Pd.Exper. w/Disad.Young (PDEXDSYG)	0.102	0.025	-0.077**
Large-Muscle Equipment (MUSCLEQP)	-0.065	0.011	0.076**
Intensity of Combined (Lang. + Quan.) Prog. (INTNSCMB)	-0.019	0.211	0.230**
Amt. of Art Mater. (ARTMATRL)	-0.002	0.070	0.072**
Emph. on Child Socializ.(CHLDSOCL)	-0.122	-0.057	0.065**
Amt. of Outdoor Play Areas (OUTPLAY)	-0.068	0.001	0.069**
Teacher's General Educ. Prep. (TGEDPREP)	0.065	0.003	-0.062**
Teacher's Educ. in Early Child. (TFECHTNG)	-0.044	0.015	0.059**
Ave. Formal Educ. in Early Child. (AVFECHEF)	-0.049	0.001	0.050*
Emph. on Math Prog. (MATH-PRG)	0.077	0.022	-0.055*
Months of Teach. Special Train. (MOTSPTR)	0.034	-0.013	-0.047*
Quality of Teacher's Cognit. Input (POT-COGN)	0.034	0.078	0.044**
Ethnic Homogen. of Class (ETHNHOMO)	0.128	0.083	-0.045*

*Designates a corr. diff. with prob. less than .05

**Designates a corr. diff. with prob. less than .01

Table 4

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PSI - PERSONAL-SOCIAL RESPONSIVENESS SUBSCORE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Large-Muscle Equipment (MUSCLEQP)	-0.066	0.028	0.094**
Teacher's Pd. Exper. w/Disad. Young (PDEXDSYG)	0.065	-0.024	-0.089**
Amt. of Art Mater. (ARTMATRL)	-0.030	0.051	0.081**
Emph. on Lang. Prog. (LANG-PRG)	0.075	0.149	0.074**
Emph. on Math Prog. (MATH-PRG)	0.123	0.059	-0.064*
Emph. on Child Socializ. (CHLDSOCL)	-0.065	-0.009	0.056*
Overall Qual. of Facil. (FACILITY)	0.036	0.088	0.052*
Teacher's Pd. Exp. w/Disad. Older (PDEXDSOL)	0.059	0.009	-0.050*

* Designates a corr. diff. with prob. less than .05

** Designates a corr. diff. with prob. less than .01

Table 5

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PSI - ASSOCIATIVE VOCABULARY SUBSCORE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Large-Muscle Equipment (MUSCLEQP)	-0.126	-0.006	0.120**
Teacher's Prep. Train. for Head Start (TPREHS)	0.015	0.114	0.099**
Teacher's Pd. Exper. w/Disad. Young (PDEXDSYG)	0.085	0.008	-0.077**
Special Creative Activ. Areas (SPCLCREA)	0.043	-0.031	-0.074*
Ave. Head Start Prep. Train. (AVHSPREP)	-0.031	0.029	0.060*
Pupil/Teacher (Effective[1]) Ratio (PUPLEFTR)	0.034	0.093	0.059*
Emph. on Math Prog. (MATH-PRG)	0.042	-0.024	-0.066*
Amt. of Sensory-Motor Mater. (SENSMATL)	-0.070	-0.011	0.059*

[1] Contribution of each teacher weighted according to months of teacher's participation during evaluation period.

* Designates a corr. diff. with prob. less than .05

** Designates a corr. diff. with prob. less than .01

Table 6

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PSI - CONCEPT ACTIVATION - NUMERICAL SUBSCORE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Months of Teach. Special Train. (MOTSPTR)	0.025	-0.072	-0.097**
Child-Centered Program (CHLDCEN)	-0.037	-0.125	-0.088**
Amt. of Outdoor Play Areas (OUTPLAY)	-0.029	0.065	0.094**
Teacher's General Educ. Prep. (TGEDPREP)	-0.010	-0.090	-0.080**
Ave. Head Start Prep. Train. (AVHSPREP)	-0.025	-0.094	-0.069**
Emph. on Child Socializ. (CHLDSOCL)	-0.037	0.028	0.065**
Intensity of Combined (Lang. + Quan.) Prog. (INTNSCMB)	0.164	0.332	0.168*
Teacher's Pd. Exper. w/Advan. Older (PDEXADOL)	0.068	0.006	-0.062*
Ave. Gen. Educ. of Teachers (AVGNLED)	0.080	0.025	-0.055*
Ave. Formal Educ. of Teacher (Effective[1]) (AVFMLEFF)	-0.014	-0.065	-0.051*

[1] Contribution of each teacher weighted according to months of teacher's participation during evaluation period.

*Designates a corr. diff. with prob. less than .05

**Designates a corr. diff. with prob. less than .01

Table 7

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PSI - CONCEPT ACTIVATION - SENSORY SUBSCORE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Emph. on Lang.Prog. (LANG-PRG)	0.202	0.304	0.102**
Teacher's General Educ. Prep. (TGEDPREP)	-0.071	-0.175	-0.104**
Special Creative Activ.Areas (SPCLCREA)	0.060	-0.047	-0.107**
Amt. of Outdoor Play Areas (OUTPLAY)	0.024	0.129	0.105**
Ethnic Homogen. of Class (ETHNHOMO)	0.105	0.010	-0.095**
Amt. of Art Mater. (ARTMATRL)	-0.086	0.003	0.089**
Intensity of Combined (Lang. + Quan.) Prog. (INTNSCMB)	0.102	0.306	0.204**
Ave. Formal Educ. in Early Child. (AVFECHEF)	-0.068	0.003	0.071**
Months Teach.Employ. w/Class (MOEMSCLS)	0.035	0.107	0.072**
Large-Muscle Equipment (MUSCLEQP)	-0.142	-0.069	0.073**
Teacher's Pd. exper. w/Disad. Young (PDEXDSYG)	0.021	-0.049	-0.070**
Ave. Head Start Prep. Train. (AVHSPREP)	0.006	-0.050	-0.056*
Intensity Use of Quant. Prog. (INTNSQUA)	0.261	0.410	0.149*
Emph. on Child Socializ. (CHLDSOCL)	-0.047	0.006	0.053*
Art Activities (OSCI) (OTCH-ART)	-0.031	0.024	0.055*
Teacher's Educ.in Early Child. (TECHTNG)	-0.038	0.017	0.055*
Amt. of Cognitive Mater. (COGNMATL)	-0.003	0.051	0.054*
Emph. on Indep. & Self-Care (IND-SELF)	-0.008	0.039	0.047*

*Designates a corr. diff. with prob. less than .05

**Designates a corr. diff. with prob. less than .01

Table 8

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON ANIMAL HOUSE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Intensity of Language Program (LANG-PRG)	0.061	-0.064	-0.125**
Teacher's Pd. Exper. w/Advan. Older (PDEXADOL)	-0.015	0.074	0.089**
Emph. on Child Socializ. (CHLDSOCL)	-0.113	-0.042	0.071*
Special Cognitive Activ. Area (SPDLCOGA)	-0.001	-0.080	-0.079*
Ave. Gen. Educ. of Teachers (AVGNLED)	0.005	-0.063	-0.068*
Parent-Centered Program (PARNTCNT)	0.017	-0.049	-0.066*
Special Child Dev. & Soc. Areas (SPCLCDEV)	-0.017	0.054	0.071*
Teacher's Pd. Exper. in Head Start (PDEXHS)	-0.015	0.051	0.066*
Ave. Formal Educ. of Teach. (Effective[1]) (AVFMLEFF)	0.038	-0.021	-0.059*

[1] Contribution of each teacher weighted according to months of teacher's participation during evaluation period.

* Designates a corr. diff. with prob. less than .05

** Designates a corr. diff. with prob. less than .01

Table 9

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON BIRCH WORK RESPONSE SCORE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Staff Size (Effective[1]) (EFSTFSZE)	-0.016	-0.129	-0.113**
Amt. of Sensory-Motor Mater. (SENSMATL)	-0.100	0.019	0.119**
Pupil/Teacher (Effective[1]) Ratio (PUPLEFTR)	-0.045	0.056	0.101**
Task-Centered Program (TASKCEN)	0.047	-0.047	-0.094**
Ave. Gen. Educ. of Teachers (AVGNLED)	-0.064	0.028	0.092**
Large-Muscle Equipment (MUSCLEQP)	-0.070	0.021	0.091*
Amt. of Art Mater. (ARTMATRL)	-0.056	0.033	0.089*
Intensity of Combined (Lang. + Quan.) Prog. (INTNSCMB)	0.180	0.401	0.220*
Teacher's Age (TAGE)	-0.005	-0.095	-0.090*
Child-Centered Program (CHLDCEN)	-0.053	0.029	0.082*
Amt. of Cognitive Mater. (COGNMATL)	0.009	0.094	0.085*
Teacher's Pd.Exper. In Head Start (PDEXHS)	0.156	0.081	-0.075*
Teacher's Pd. Exper. w/Advan. Young (PDEXADYG)	-0.044	0.031	0.075*

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[1] Contribution of each teacher weighted according to months of teacher's participation during evaluation period.

*Designates a corr. diff. with prob. less than .05

**Designates a corr. diff. with prob. less than .01

Table 10

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON BIRCH VERBAL RESPONSE SCORE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Teacher's General Educ. Prep. (TGEDPREP)	-0.052	-0.260	0.208**
Special Creative Activ.Areas (SPCLCREA)	0.048	-0.088	-0.136**
Intensity of Combined (LANG. + Quan.) Prog. (INTNSCMB)	0.145	0.420	0.275**
Intensity Use of Quant. Prog. (INTNSQUA)	-0.087	0.225	0.312**
Ave. Gen. Educ. of Teachers (AVGNLED)	-0.064	-0.151	-0.087**
Amt. of Sensory-Motor Mater. (SENSMATL)	-0.195	-0.285	-0.090**
Emph. on Math Prog. (MATH-PRG)	-0.099	-0.189	-0.090**
Child-Centered Program (CHLDCEN)	-0.091	-0.172	-0.081**
Emph. on Lang. Prog. (LANG-PRG)	0.059	0.140	0.081**
Teacher's Educ. in Early Child (TFECHTNG)	-0.068	0.010	0.078*
Months of Teach. Special Train. (MOTSPTR)	-0.018	-0.096	-0.078*
Ave. Formal Educ. in Early Child. (AFECHEF)	-0.125	-0.054	0.071*
Emph. on Indep. & Self-Care (IND-SELF)	0.018	-0.052	-0.070*
Teacher's Pd. Exp. w/Disad. Older (PDEXDSOL)	0.046	-0.029	-0.075*
Ave. Formal Educ. of Teach. (Effective[1]) (AVFMLEFF)	-0.078	-0.143	-0.065*
Ave. Educ. in Early Child of Teach. (Eff.) (AVFMLECH)	-0.043	0.022	0.065*

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[1] Teacher contributions weighted according to months of participation during evaluation period.

*Designates a corr. diff. with prob. less than .05

**Designates a corr. diff. with prob. less than .01

Table 10

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON BIRCH VERBAL RESPONSE SCORE

(CONTINUED)

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Amt. of Art Mater. (ARTMATR)	-0.099	-0.163	-0.064*
Emph. on Child Socializ. (CHLDSOCL)	0.003	0.063	0.060*

*Designates a corr. diff. with problem less than .05

Table 11

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON BIRCH SPONTANEOUS RESPONSE SCORE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Intensity of Combined (Lang. + Quan.) Prog. (INTNSCMB)	0.131	0.439	0.308**
Teacher's Pd. Exper. W/Advan. Young (PDEXADYG)	-0.097	-0.009	0.088**
Emph. on Lang. Prog. (LANG-PRG)	0.013	0.092	0.079**
Teacher-Class Ethnic Match (ETHMATCH)	0.158	0.087	-0.069**
Ethnic Homogen. of Class (ETHNHOMO)	0.093	0.024	-0.069**
Task-Centered Program (TASKCEN)	0.155	0.084	-0.071**
Overall Qual. of Facil. (FACILITY)	-0.182	-0.111	0.071**
Emph. on Indep. & Self-Care (IND-SELF)	0.068	0.002	-0.066**
Parent-Centered Program (PARNTCNT)	-0.003	0.059	0.062*
Amt. of Cognitive Mater. (COGNMATL)	-0.220	-0.157	0.063*
Use of Routines (OSCI) (OTCHROUT)	0.244	0.301	0.057*
Amt of Outdoor Play Areas (OUTPLAY)	-0.144	-0.084	0.060*
Months of Teach. Special Train. (MOTSPTR)	0.075	0.016	-0.059*
Intensity Use of Quant.Prog. (INTNSQUA)	-0.113	0.127	0.240*
Teacher's Age (TAGE)	0.183	0.126	-0.057*
Ave. Formal Educ. in Early Child. (AVFECHEF)	0.026	0.077	0.051*

*Designates a corr. diff. with prob. less than .05

**Designates a corr. diff. with prob. less than .01

Table 12

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON FACTORS AFFECTING TEST PERFORMANCE (FATP)

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Large-Muscle Equipment (MUSCLEQP)	-0.109	0.071	0.180**
Teacher's General Educ. Prep. (TGEDPREP)	0.048	-0.087	-0.135**
Intensity Use of Quant. Prog. (INTNSQUA)	0.175	-0.156	-0.331**
Teacher's Pd. Exper. w/Advan. Young (PDEXADYG)	0.046	-0.083	-0.129**
Ave. Special Train. of Teach. (Effective (AVSPTREX)	0.106	-0.005	-0.111**
Emph. on Child Socializ. (CHLDSOCL)	-0.047	0.054	0.101**
Structured Lessons (OTCHLGRP)	-0.007	0.097	0.104**
Intensity of Combined (Lang. + Quan.) Prog. (INTNSCMB)	0.325	0.040	-0.285**
Months of Teach. Special Train. (MOTSPTR)	0.074	-0.035	-0.109**
Pupil/Teacher (Effective[1]) Ratio (PUPLEFTR)	-0.075	0.023	0.098**
Teacher's Pd. Exper. w/Disad. Young (PDEXDSYG)	0.063	-0.042	-0.105**
Verbal Communic. (OSCI) (OCLSVRBL)	0.047	0.141	0.094**
Intensity Teach. Train. in Head Start (INTSSPTR)	0.586	0.291	-0.295**
Ave. Gen. Educ. of Teachers (AVGNLED)	-0.006	-0.094	-0.088**
Emph. on Indep. & Self-Care (IND-SELF)	-0.070	0.013	0.083**
Teacher's Concern for Indiv. Child (POT-CHLD)	-0.109	-0.029	0.080**
Teacher's Pd. Exp. w/Disad. Older (PDEXDSOL)	0.062	-0.028	-0.090**
Special Child Dev. & Soc. Areas (SPCLCDEV)	-0.020	-0.106	-0.086*
Child-Centered Program (CHLDCEN)	0.023	-0.044	-0.067*

* Designates a corr. diff. with prob. less than .05

** Designates a corr. diff. with prob. less than .01

[1] Teacher contribution weighted according to months of participation.

Table 13

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON SOCIOMETRIC SOCIAL ISOLATE SCORE

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Intensity Teach. Train. in Head Start (INTSSPTR)	0.230	0.002	-0.228*

Table 14

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PARENT ATTITUDE TOWARD HEAD START

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Special Child Dev. & Soc. Areas (SPCLCDEV)	-0.064	0.050	0.114*
Amt. of Cognitive Mater. (COGNMATL)	-0.046	0.057	0.103*
Teacher's Sex (TSEX)	-0.006	0.097	0.103*

Table 15

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PARENT ATTITUDE TOWARD EDUCATION

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Task-Centered Program (TASKCEN)	0.047	0.133	0.086*

* Designates a corr. diff. with prob. less than .05

** Designates a corr. diff. with prob. less than .01

Table 16

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PARENT FEELING OF PERSONAL POWER

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Ave. Gen. Educ. of Teachers (AVGNLED)	0.056	-0.061	-0.117**
Teacher's Pd. Exper. w/Disad. Young (PDEXDSYG)	0.030	-0.089	-0.119**
Ave. Formal Educ. of Teach. (Effective[1]) (AVFMLEFF)	0.001	-0.076	-0.077*

Table 17

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PARENT DEGREE OF INVOLVE. IN COMMUNITY

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Pupil/Teacher (Effective[1])Ratio (PUPLEFTR)	0.096	-0.033	-0.129**
Staff Size (Effective[1]) (EFSTEFSZE)	0.002	0.122	0.120**
Teacher's Pd. Exper. w/Advan. Young (PDEXADYG)	0.191	0.084	-0.107**
Staff Stability (PROFTEFF)	-0.020	0.079	0.099**
Ave. Formal Educ. of Teach. (Effective[1]) (AVFMLEFF)	0.012	0.096	0.084**
Emph. on Math Prog. (MATH-PRG)	0.132	0.051	-0.081*
Emph. on Lang. Prog. (LANG-PRG)	0.087	0.022	-0.065*

[1] Contribution of each teacher weighted according to months of teacher's participation during evaluation period.

* Designates a corr. diff. with prob. less than .05

** Designates a corr. diff. with prob. less than .01

Table 18

PRE VS. POST CORRELATIONS BETWEEN INDEP. VARIABLES AND VALUES ON PARENT FEELING OF ALIENATION

Indep. Variables	Corr. Pre	Corr. Post	Corr. Diff.
Months Teach. Employ. w/Class (MOEMSCLS)	0.079	-0.032	-0.111**
Quality of Teacher's Cognit. Input (POT-COGN)	0.033	0.117	0.084**
Group Activ. & Routines (OSCI) (OTCHROUT)	0.070	-0.002	-0.072*
Teacher's Pd. Exper. w/Disad. Young (PDEXDSYG)	-0.005	-0.078	-0.073*
Staff Stability (PROFTEFF)	0.066	-0.001	-0.067*
Teacher's Pd. Exper. in Head Start (PDEXHS)	0.117	0.044	-0.073*
Overall Qual. of Facil. (FACILITY)	0.028	-0.043	-0.071*
Staff Size (Effective[1]) (EFSTFSZE)	0.026	-0.038	-0.064*

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[1] Contribution of each teacher weighted according to months of teacher's participation during evaluation period.

* Designates a corr. diff. with prob. less than .05

** Designates a corr. diff. with prob. less than .01

between program variables and posttest scores; and the differences between the two correlations. A negative sign (-) by a number in the "Corr. Diff." column means that the post correlation was smaller than the pre correlation (i.e., that a higher value on the program variable was associated with lower performance); the absence of any sign means that the post correlation was larger, and suggests the possibility of a beneficial effect of the program variable. A double asterisk (**) by a correlation difference signifies that the chance probability of occurrence of a difference of that size or larger is no greater than .01; a single asterisk (*) designates a probability of no greater than .05.

E. SELECTION OF SUBSET OF VARIABLES FOR ANALYSES OF VARIANCE

As described in the preceding section, tests were performed on pre-post differences in correlation between each of the potential independent variables, and each of the potential dependent variables. The results of this correlational analysis were then used, along with several other criteria, to winnow the variables down to a number that would be manageable within the limits of the project and at the same time would give some reasonable promise of showing significant relationships between independent and dependent variables in subsequent analyses of variance.

One screening criterion used in selecting the final subset of variables was whether the pre-post correlation differences reached statistical significance. For example, all of the 12 OSCI factor scores showed virtually no significant pre-post differences in correlation with dependent variables, and they were eliminated from further analyses. Altogether, over half of the original potential independent variables were screened out on this criterion. One or two dependent variables were also eliminated for this reason (e.g., the Sociometric).

Finally, some variables (e.g., quantity and quality of cognitive material, and parent attitude toward education) were retained even though they did not show strong relationships with a large number of other variables, simple because such relationships had been expected and it was felt that even null results might be of interest.

The variables finally selected for more intensive study by analyses of variance are briefly described in the remainder of this section. More detailed definitions and examples of components of each variable are given in Appendix B.

PROGRAM VARIABLES

1. Teacher Background Data

a. Level of Teacher's General Educational Preparation (TGEDPREP)

This scale is derived from the Sample Class Characteristics of Teaching Staff form. A high value indicates a high level of formal education, but not necessarily in an area related to teaching.

b. Length of Teacher's Paid Experience with Disadvantated Young (PDEXDSYG)

A high score on this scale, also derived from the same form, indicates greater length of teaching experience with young children (preschool age) from poverty families.

2. Teacher Dynamics/Behavior

a. Teacher's Emphasis on Cognitive Input (POT-COGN)

High scores indicate that a teacher had been observed often in activities believed to aid cognitive growth. Specific examples of such activities are: making responses to individual children; providing multi-sensory stimulation; accepting alternative answers from the children; etc. The variable is derived from the Post Observation of Teacher.

b. Type of Control Used by Teacher (PIT-126A)

This variable comes from the Post Program Interview with Teacher (PPIWT). A high score indicates that the teacher reports that she avoids physical control and uses more abstract, verbal control methods; a low score means reported use of physical control.

3. Program/Curriculum (All variables derived from PPIWT)

a. Parent-Centered Program (PARNTCNT)

As noted earlier, Head Start policy has placed heavy emphasis on the importance of working closely with parents and involving them as learners, teacher aides, etc. Such participation might be expected to contribute to more positive parent attitudes and perhaps even to aid child performance. The PRNTCNT variable provides a measure of the extent to which programs have systematically emphasized parent involvement; this measure can then be tested for possible beneficial effects. High scores on PARNTCNT indicate that a class actively promoted parent participation.

b. Program Emphasis on Child Independence and Self-care (IND-SELF)

The Post Program Interview with Teacher (PPIWT) includes a number of items asking about the extent to which teachers placed emphasis on activities designed to enhance children's ability to operate independently and in a self-reliant manner (e.g., Going to toilet alone). These items were used to form the IND-SELF variable, which is scaled so that a high value indicates a strong reported emphasis. It can be hypothesized that such an emphasis has beneficial effects on a number of cognitive measures that require children to work independently on problems.

c. Program Emphasis on Child Socialization (CHLDSOCL)

This variable measures the reported extent of program emphasis on class activities designed to strenghthen children's social behavior (e.g., "Work and play cooperatively"). This program goal is often given heavy weight by advocates of the "whole child" approach, where the goal is to enhance mental and social health. Use of the CHLDSOCL variable will provide a chance to test possible beneficial effects of reported socialization efforts on measures of social behavior and verbal interactions, as well as on cognitive measures.

d. Classroom Emphasis on Language Program (LANG-PRG)

This variable, based on several PPIWT items, measures reported degree of emphasis on language-related procedures and materials (e.g., "Show and tell," "Story period"). Evaluation of this program variable should be of particular interest, since a number of best known preschool programs are built primarily around enhancement of language abilities, which many educators feel to be the key to both cognitive and social growth.

4. Materials and Equipment

a. Classroom Materials for Cognitive Learning (COGNMATL)

It might be expected that large quantities and good quality of materials and equipment designed to enchance cognitive learning (e.g., learning games, microscopes, etc.) would lead to superior performance on cognitive measures such as the Stanford-Binet and the Caldwell-Soule Preschool Inventory. The COGNMATL variable, which is based on items from the Class Facilities and Resources Inventory, provides a means to evaluate possible beneficial effects.

b. Equipment for Large Muscle Activities (MUSCLEQP)

This scale, also derived from the Classroom Facilities and Resources Inventory, is a measure of quantity and condition of equipment (e.g., swings, balls) designed to develop children's large muscles. It was included for evaluation by analysis of variance, chiefly because of its strong showing in the preliminary correlation analysis rather than on any theoretical basis.

DEPENDENT (PERFORMANCE) VARIABLES

These variables can be grouped into three major categories, each of great importance and each representing a priority goal of Head Start. The categories are child cognitive behavior, child affective social behavior, and parent attitudes and behavior.

1. Child Cognitive Behavior

Cognitive development in children has always been considered an important program goal, and has been a focus of many of the earlier studies in early childhood education. Several cognitive instruments were included in the 1968-69 National Evaluation, and although these instruments are all presumed to reflect intellectual capacity, each was designed to tap a somewhat different facet of cognitive development. Cognitive variables included in the present study were derived from the Stanford-Binet, the Caldwell-Soule Preschool Inventory, and the Animal House subtest of the Wechsler Preschool and Primary Inventory.

a. Stanford-Binet Test IQ

Although the Binet has sometimes been criticized as being culturally biased, it has become a widely used measure of cognitive performance. Binet scores reflect, however, motivational as well as basic aptitude factors. The IQ scores used in this study were taken directly from the Binet recording form.

b. Caldwell-Soule Preschool Inventory

This is a normalized (age-adjusted) total score derived from the Caldwell-Soule test. It provides an additional measure of general aptitude, designed to be more sensitive to the effects of intervention programs than the Binet. Four non-age-adjusted ("raw") subscores[1] were also obtained from this instrument; these are listed below:

c. Caldwell-Soule: Personal-Social Responsiveness Subscores

This subscore is based on several items in the Caldwell-Soule that are intended to reflect the child's knowledge of his own personal world and his ability to get along with and respond to communications of another person. To some extent, therefore, it may indicate social growth as well as cognitive development in the usual sense.

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[1] Because the five Caldwell-Soule subscores are not age-adjusted, and may thus be confounded with age differences among different programs, all findings involving these scores must be viewed with particular caution. They were regarded as of potential interest for this study, however, because of their possible value in giving analytic information about the children's verbal performance, quantitative performance, etc.

d. Caldwell Soule: Associative Vocabulary Subscore

This subscore, based on selected items from the Caldwell-Soule, presumably measures the child's ability to demonstrate awareness of the connotation of a word by carrying out some action or by associating to certain intrinsic qualities of the underlying verbal concept. Thus, it should be particularly sensitive to the child's progress in developing language skills.

e. Caldwell-Soule: Concept Activation-Numerical Subscore

This subscore of the Caldwell-Soule is intended to measure the child's ability to label quantities, to make judgments of "more" or "less," and to recognize serial positions.

f. Caldwell-Soule: Concept Activation-Sensory Subscore

This is a measure of the child's awareness of certain sensory attributes (shape, size, etc.) and his ability to perform certain visual-motor tasks.

g. Animal House

Whereas the Binet and the Caldwell-Soule tend to measure knowledge and skills already gained, the Animal House subtest of the Wechsler Preschool and Primary Inventory is intended to measure ability to learn new things. The Animal House variable is the scaled (age-adjusted) score.

2. Child Affective/Social Behavior

Although social and emotional development has always been stated as a major goal of Head Start, it has not been tested in previous research nearly so much as cognitive growth, mainly because of the shortage of reliable instruments. A strong effort was made, however, to obtain a broader range of social-emotional measures in the 1968-69 National Evaluation, and five scales from these measures were selected for the analyses of variance in the present study.

a. Birch Work Response Score

This variable, and the two following, are derived from the Stanford Binet examiner's ratings of the child's responses to that test. They are included among the affective measures because they are concerned with the children's characteristic and persistent response modes rather than with the correctness of the responses.

A high score on this variable means that the child attempted to meet the demands of the tasks, whether or not he was correct in his responses. Thus it provides a measure of task orientation.

b. Birch Verbal Response Score

A high score on this variable means that the child gave many verbal responses (as contrasted to non-verbal responses such as head-shaking), regardless of whether or not his verbalization was correct.

c. Birch Spontaneous Response Score

A high score means that the child gave many "extension responses," in which he volunteered extra information beyond that directly required by the questions, and that he required few prompts from the examiner.

d. Factors Affecting Stanford-Binet Test Performance

This variable can be considered a measure of the extent to which a child adjusts successfully to the conditions of the Stanford-Binet test situation, as rated by the examiner. A high score means that the child was not adversely affected by various test conditions or by his reactions to those conditions. The interest in this variable is that it may reflect a more generalized ability to respond effectively to one's environment.

3. Parent Attitudes and Behavior

In many earlier studies, parent behaviors have been analyzed as independent variables: that is, as determiners of their children's behavior. In the present study, certain attitudes and behaviors were used as dependent variables, to learn how they were affected by attributes of the Head Start program. The five parent variables listed below were all derived from different subsets of items in the Parent Interview form.

a. Attitude Toward Head Start

It might be expected that certain program approaches (e.g., those encouraging active parent involvement) would be more effective than others in promoting positive parent feelings toward Head Start. To test this possibility, three items related to parent involvement were used to construct this variable.

b. Attitude Toward Education

This computed variable is based on nine items that reflect the parent's attitude toward the importance and value of education. An increase in positive value would presumably be a valuable outcome of Head Start as it might facilitate the children's development in school.

c. Feeling of Personal Power

This computed variable is based on nine items related to the parent's feeling of personal power (high score), or conversely, feeling of powerlessness to control one's environment (low score). For example, one item asks, "If you disagree with the school principal, can you do anything about it?" Enhancing the parent's feeling of power is considered an important objective, because feelings of hopelessness and frustration are felt to perpetuate the poverty cycle.

d. Degree of Involvement in the Community

This variable is based on six items relating to the degree to which the parent participates in various community groups and activities. Such a measure can be useful in gauging the parent's motivation to improve and to become involved in the community.

e. Feeling of Alienation

This scale, based on five items from the Parent Interview, reflects the extent to which the parent feels alienated from the rest of society. Thus, a high score represents an undesirable situation, i.e., a strong feeling of alienation. The argument for including this variable is similar to that for "feeling of personal power": that is, it is important to know if certain Head Start approaches are particularly effective in reducing feelings of alienation, since such feelings probably interfere with attempts to break the poverty cycle.

CHAPTER VI

THE CHILDREN: ENTERING CHARACTERISTICS

What kinds of children entered the Head Start programs? Did children with prior Head Start or other preschool experience start with an advantage? This chapter presents descriptive data on a number of personal and background characteristics of the children, and on their pretest performance levels on a variety of cognitive and affective measures. In addition, comparisons are made between the entry performance of children with prior Head Start or other preschool experience, and that of children without such prior experience.

A. PERSONAL AND BACKGROUND CHARACTERISTICS

1. South/Non-South Residence (Table 19)

Approximately one-third (34.5%) of the sample Head Start children lived in the South: that is, in the South Atlantic, East South Central, and West South Central portions of the country. Other states, including Hawaii, accounted for the remaining two-thirds of the sample. This over-sampling from the South (in relation to geographic distribution of the total population) reflects the Head Start emphasis on enrollment of children from poverty families.

2. Urban/Non-Urban Residence (Table 20)

The great majority of the sample children (77.28%) were from urban areas (cities of 50,000 population or larger), and only 22.72% were from suburbs, smaller towns, or rural areas.

3. Ethnicity (Table 21)

Over two-thirds (68.17%) of the Head Start enrollees were black. The next largest group consists of whites (17.77%), and there were significant numbers of Mexican-Americans (5.74%) and Polynesians (4.21%). All other groups combined contributed only 8.32% of the enrollment.

4. Child's Age (Table 22)

At time of entry into the program, over two-thirds of the children were between three and a half and five years old. The modal age was in the range from 49 to 53 months, and the median was slightly under four and a half years.

5. Child's Sex (Table 23)

The sample Head Start children were almost evenly divided between males (50.40%) and females (48.69%).

6. Child's Prior Preschool Experience (Table 24)

Over four-fifths (81.09%) of the sample children had had no prior Head Start or other preschool experience. Of the remaining children, approximately half had had full-year preschool or Head Start experience, and the other half had been in summer classes or other less-than-full-year programs.

7. Educational Opportunities in the Home (Table 25)

This is a derived variable based on eight items in the Parent Interview. Individual items can have values of 0, 100, or 200, and the derived figure is an average of the values, so that the possible range on the variable is 0-200. The items ask whether anyone reads to the child at home; how often the child is read to; whether different kinds of material are read to him (e.g., children's books, adult literature, etc.); and whether he has access to paper and pencils.

The great bulk of the children (85.99%) had values between 37 and 62, indicating little variability in the parents' answers to these questions. It would appear that most of the children were read to at home, but that this occurred only "sometimes" (e.g., once or twice a week), and usually involved only one type of material.

Table 19

DISTRIBUTION OF VALUES ON SOUTH/NON-SOUTH RESIDENCE

	Freq.	Percentage of Non-Blanks
South	673	34.50
Non-South	1278	65.50
	N = 1951	

Table 20

DISTRIBUTION OF VALUES ON URBAN/NON-URBAN RESIDENCE

	Freq.	Percentage of Non-Blanks
Urban	1500	77.28
Non-Urban	441	22.72
	N = 1941	

Table 21

DISTRIBUTION OF VALUES ON CHILD'S ETHNICITY

	Freq.	Percentage of Non-Blanks
Black	1343	68.17
Mexican-American	113	5.74
Puerto Rican	28	1.42
Other White	350	17.77
American Indian	1	0.05
Oriental	15	0.76
Eskimo	0	0.00
Polynesian	83	4.21
Other (including Mixed)	37	1.88
	N = 1970	

Table 22

DISTRIBUTION OF VALUES ON CHILD'S AGE AT ENTRY (MONTHS)

Values	Freq.	Percentage of Non-Blanks
69-73	24	1.2
64-68	205	10.3
59-63	254	12.7
54-58	387	19.4
49-53	593	29.7
44-48	435	21.8
39-43	77	3.8
34-38	19	1.0
Under 34	2	0.1
	N=1996	

Table 23

DISTRIBUTION OF VALUES ON CHILD'S SEX

	Freq.	Percentage of Non-Blanks
Male	1002	50.40
Female	968	48.69
	N = 1970	

Table 24

DISTRIBUTION OF VALUES ON CHILD'S PRIOR PRESCHOOL EXPERIENCE

	Freq.	Percentage of Non-Blanks
Full year	183	9.38
Less than year	186	9.53
None	1582	81.09
	N = 1951	

Table 25

DISTRIBUTION OF VALUES ON EDUCATIONAL OPPORTUNITIES IN THE HOME

Values	Freq.	Percentage of Non-Blanks
121 - 130	2	0.18
111 - 120	1	0.09
101 - 110	0	0.00
91 - 100	7	0.62
81 - 90	16	1.42
71 - 80	98	8.69
61 - 70	236	20.91
51 - 60	113	10.01
41 - 50	387	34.31
31 - 40	237	21.01
21 - 30	19	1.69
Below 21	12	1.07
	N = 1128	

B. PRETEST PERFORMANCE

1. Cognitive Measures

a. Stanford-Binet IQ Score (Table 26)

The Head Start children at pretest time had IQs ranging from below 56 to over 120. Both the median value and the mean were almost exactly at 89, indicating that children entering the programs were well below the overall national average of 100.

b. Caldwell-Soule PSI (Table 27)

The mean of normed pretest scores on this instrument was substantially higher (109.41 compared to 100) than the normed mean obtained by Herman and Adkins (1970) at the Head Start Research Center, University of Hawaii. This finding is surprising, since the norming equation used in the present study was adopted directly from the formula developed at Hawaii, and the sample of children was very similar in the two studies (approximately 120 of the children used by Hawaii for development of the norms were not on the data tapes analyzed by System Development Corporation). Because of the disparity in findings, special checks were made on the formula and the computer programs used to norm the data, and several individual scores were converted manually to verify the computer-generated normed scores. These procedures failed to reveal any errors in the figures reported in Table 27.

Since the Caldwell-Soule was developed specifically for Head Start, there are no norms available for the general population, against which the Head Start children's performance can be gauged.

Table 26

DISTRIBUTION OF VALUES ON STANFORD-BINET (PRE)

Values	Freq.	Percentage of Non-Blanks
Above 120	21	1.20
116 - 120	28	1.60
111 - 115	66	3.79
106 - 110	72	4.14
101 - 105	184	10.57
96 - 100	225	12.92
91 - 95	230	13.21
86 - 90	232	13.33
81 - 85	224	12.87
76 - 80	160	9.19
71 - 75	120	6.90
66 - 70	76	4.36
61 - 65	54	3.10
56 - 60	26	1.50
Below 56	23	1.32

N = 1741 M = 89.04
SD = 14.23

Table 27

DISTRIBUTION OF VALUES ON CALDWELL-SOULE PSI (PRE)

Values	Freq.	Percentage of Non-Blanks
Above 150	10	0.69
146 - 150	18	1.24
141 - 145	39	2.68
136 - 140	49	3.35
131 - 135	85	5.84
126 - 130	125	8.57
121 - 125	110	7.53
116 - 120	132	9.04
111 - 115	150	10.28
106 - 110	106	7.26
101 - 105	146	10.00
96 - 100	145	9.95
91 - 95	98	6.72
86 - 90	103	7.07
81 - 85	64	4.40
76 - 80	33	2.26
71 - 75	21	1.44
66 - 70	12	0.82
Below 66	13	0.91

N = 1459

MEAN = 109.41

SD = 18.71

c. PSI: Personal-Social Responsiveness Subscore (Table 28)

On this and the following three subscores of the Caldwell-Soule, there are no national norms by which to interpret the Head Start children's absolute level of performance. However, gains on these subscores, and particularly differential gains for different subgroups and program approaches are analyzed in later chapters of this report. Scores on this subtest were fairly symmetrical in distribution, with both a mean and a median close to 10.6. They covered the entire possible range from 0 to 18.

d. PSI: Associative Vocabulary Subscore (Table 29)

Pretest subscores covered the entire possible range of 0 to 12. The scores were slightly skewed with a mean of 5.28 and a median slightly under 5.

e. PSI: Concept Activation-Numerical Subscore (Table 30)

Pretest subscores covered the entire possible range from 0 to 15, with greater loading at the low end indicated by median value between 5 and 6.

f. PSI: Concept Activation-Sensory Subscore (Table 31)

On this subscore also, values covered the entire possible range, from 0 to 19. There was a fairly symmetrical distribution, with the mean and median both close to 11.

g. Animal House (Table 32)

This scale had a possible range from 1 to 19; the observed values covered this entire range. The pretest mean was 8.45 and the median slightly under 8, as compared with a mean of 10 for the national standardization sample of the general population. These results confirm the finding on the Stanford-Binet that the Head Start children entered the programs somewhat below the national average on measures of general aptitude.

Table 28

DISTRIBUTION OF VALUES ON
PSI: PERSONAL-SOCIAL RESPONSIVENESS SUBSCORE (PRE)

Values	Freq.	Percentage of Non-Blanks
18	20	1.37
17	46	3.15
16	90	6.16
15	95	6.51
14	116	7.95
13	109	7.47
12	146	10.00
11	136	9.32
10	146	10.00
9	122	8.36
8	127	8.70
7	95	6.51
6	74	5.07
5	71	4.86
4	33	2.26
3	17	1.16
2	8	0.55
1	3	0.21
0	6	0.41

N = 1460
MEAN = 10.64
SD = 3.70

Table 29

DISTRIBUTION OF VALUES ON PSI: ASSOCIATIVE VOCABULARY SUBSCORE (PRE)

Values	Freq.	Percentage of Non-Blanks
12	13	0.89
11	42	2.88
10	61	4.18
9	98	6.72
8	138	9.47
7	175	12.00
6	148	10.15
5	168	11.52
4	167	11.45
3	166	11.39
2	141	9.67
1	84	5.76
0	57	3.91

N = 1458

MEAN = 5.28

SD = 2.88

Table 30

DISTRIBUTION OF VALUES ON
PSI: CONCEPT ACTIVATION-NUMERICAL SUBSCORE (PRE)

Values	Freq.	Percentage of Non-Blanks
15	8	0.55
14	6	0.41
13	13	0.89
12	31	2.13
11	38	2.61
10	69	4.74
9	113	7.76
8	145	9.95
7	165	11.32
6	192	13.18
5	190	13.04
4	198	13.59
3	132	9.06
2	98	6.73
1	39	2.68
0	20	1.37

N = 1457

MEAN = 5.98

SD = 2.87

Table 31

DISTRIBUTION OF VALUES ON PSI: CONCEPT ACTIVATION-SENSORY SUBSCORE (PRE)

Values	Freq.	Percentage of Non-Blanks
19	45	3.09
18	57	3.91
17	76	5.21
16	87	5.97
15	118	8.09
14	111	7.61
13	127	8.71
12	119	8.16
11	112	7.68
10	136	9.33
9	108	7.41
8	103	7.06
7	73	5.01
6	60	4.12
5	42	2.88
4	39	2.67
3	25	1.71
2	3	0.21
1	6	0.41
0	11	0.75

N = 1458

MEAN = 11.44

SD = 4.16

Table 32

DISTRIBUTION OF VALUES ON ANIMAL HOUSE PRETEST

Values	Freq.	Percentage of Non-Blanks
19	3	0.21
18	1	0.07
17	5	0.36
16	13	0.92
15	13	0.92
14	24	1.70
13	45	3.20
12	75	5.33
11	142	10.09
10	150	10.65
9	191	13.57
7	199	14.13
6	170	12.07
5	114	8.10
4	47	3.34
3	11	0.78
2	10	0.71
1	7	0.50

N = 1408

MEAN = 8.45

SD = 2.79

2. Social-Emotional Measures

a. Birch Work Response Score (Table 33)

Values on this scale ranged from 60 to 100 (out of a possible range of 0 to 100). The pretest median was 92 and the mean was 90, indicating a heavy loading at the high end of the scale. A score of 90 means that nine-tenths of the children's responses were "work" responses; that is, the children attempted to give a response to the Stanford-Binet Test item presented, whether or not the answers were correct. This suggests that the children had a work orientation when they arrived at the Head Start centers, or at least by the time they were pretested on the Stanford-Binet.

b. Birch Verbal Response Score (Table 34)

The pretest values on this scale, which had a possible range of 0 to 100, covered most of that range. The median was 57, indicating that the children gave verbal responses (as opposed to head-shaking, hand-motions, or other non-verbal responses) to approximately half the Stanford-Binet pretest items presented to them. This suggests that the children were not highly verbal at the time they entered Head Start, at least not in their interactions with the Stanford-Binet examiners.

Table 33

DISTRIBUTION OF VALUES ON BIRCH WORK RESPONSE SCORE (PRE)

Values	Freq.	Percentage of Non-Blanks
98.1 - 100.0	203	13.64
96.1 - 98.0	178	11.96
94.1 - 96.0	190	12.77
92.1 - 94.0	181	12.16
90.1 - 92.0	149	10.01
88.1 - 90.0	119	8.00
86.1 - 88.0	98	6.59
84.1 - 86.0	98	6.59
82.1 - 84.0	70	4.70
80.1 - 82.0	47	3.16
78.1 - 80.0	41	2.76
76.1 - 78.0	32	2.15
74.1 - 76.0	34	2.28
72.1 - 74.0	15	1.01
Below 72.1	33	2.22

N = 1488

MEAN = 90.41

SD = 7.75

Table 34

DISTRIBUTION OF VALUES ON
BIRCH VERBAL RESPONSE SCORE (PRE)

Values	Freq.	Percentage of Non-Blanks
Above 80.0	11	0.7
75.1 - 80.0	24	1.6
70.1 - 75.0	68	4.6
65.1 - 70.0	144	9.7
60.1 - 65.0	264	17.7
55.1 - 60.0	303	20.4
50.1 - 55.0	274	18.4
45.1 - 50.0	173	11.6
40.1 - 45.0	124	8.3
35.1 - 40.0	47	3.2
30.1 - 35.0	23	1.5
25.1 - 30.0	14	0.9
20.1 - 25.0	9	0.6
15.1 - 20.0	4	0.3
0.0 - 15.0	6	0.4

N = 1488

MEAN = 56.40

SD = 10.81

c. Birch Spontaneous Response Score (Table 35)

A high score on this derived variable means that the child gave many responses that went beyond the minimum required of him by the Stanford-Binet pretest item, and that he required few prompts by the examiner. The possible range of values on this derived scale is 0 to 300, and the actual recorded range was only 97 to 127. Within this greatly compressed range the distribution approached a normal curve in appearance, with both the mean and median very close to 112.

d. Factors Affecting Test Performance (Table 36)

The distribution of scores suggests that the entering Head Start children adapted quite well to the Stanford-Binet test conditions and were only moderately distracted by circumstances related to the examiner or to the test itself. The median value recorded by the examiners was almost 63, in a possible range of 0 to 78 (with high scores indicating maximum adaptiveness). There was considerable variability, however, with scores ranging from 11 to 72.

C. ENTRY DIFFERENCES RELATED TO PRIOR PRESCHOOL EXPERIENCE

Did children who had previously attended preschool have an initial advantage over other children when they entered the evaluation period? To answer this question, the pretest scores of two groups of the sample children were compared by two-tailed t-tests. One group had no prior preschool experience; the second group had some prior experience, up to a full year. In the great majority of cases, this prior experience was in Head Start.

Table 37 shows the results of the comparisons. From left to right, the table columns contain the sample size, mean, and standard deviation for the "No Prior Preschool" group; the corresponding figures for the "Prior Preschool" group; and the t-values for the differences between each pair of means. Differences meeting the .01 and .05 levels of significance are designated by double asterisks (**) and single asterisks (*), respectively.

Table 35

DISTRIBUTION OF VALUES ON BIRCH SPONTANEOUS RESPONSE SCORE (PRE)

Values	Freq.	Percentage of Non-Blanks
Above 124.0	9	0.60
122.1 - 124.0	12	0.81
120.1 - 122.0	21	1.41
118.1 - 120.0	19	1.28
116.1 - 118.0	111	7.46
114.1 - 116.0	240	16.13
112.1 - 114.0	303	20.36
110.1 - 112.0	222	14.92
108.1 - 110.0	237	15.93
106.1 - 108.0	201	13.51
104.1 - 106.0	86	5.78
102.1 - 104.0	16	1.08
100.1 - 102.0	8	0.53
Below 100.1	3	0.20

N = 1488

MEAN = 111.59

SD = 4.08

Table 36

DISTRIBUTION OF VALUES ON FACTORS AFFECTING TEST PERFORMANCE (PRE)

Values	Freq.	Percentage of Non-Blanks
70 - 72	65	3.70
67 - 69	53	3.02
64 - 66	704	40.11
61 - 63	286	16.30
58 - 60	177	10.09
55 - 57	109	6.21
52 - 54	74	4.22
49 - 51	50	2.84
46 - 48	54	3.08
43 - 45	40	2.28
40 - 42	41	2.34
37 - 39	26	1.48
34 - 36	25	1.42
31 - 33	19	1.08
28 - 30	14	0.80
Below 28	18	1.03
	N = 1755	

Table 37

COMPARISON OF PRETEST SCORES FOR

CHILDREN WITH AND WITHOUT PRIOR PRESCHOOL EXPERIENCE

	No Prior Preschool			Prior Preschool			
Dependent Variable	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Stanford-Binet	1176	89.07	14.26	290	91.42	13.82	2.53*
Caldwell-Soule	984	108.05	18.37	248	117.11	17.83	6.98**
Pers.-Soc. Resp. Subscore	985	10.34	3.65	248	12.15	3.53	7.01**
Assoc. Vocabulary Subscore	983	5.04	2.83	248	6.33	2.89	6.39**
Concept Activ.-Numer. Subscore	981	5.80	2.76	248	6.92	2.93	5.63**
Concept Activ.-Sensory Subscore	980	11.28	4.06	248	12.87	3.94	5.53**
Animal House	935	8.43	2.80	248	8.73	2.69	1.52
Birch Work Response	993	90.39	7.82	277	90.09	8.08	0.56
Birch Verbal Response	993	56.16	10.92	277	57.26	11.09	1.47
Birch Spont. Response	993	111.33	4.07	277	112.55	3.81	4.46**
Factors Affect. Test Perform.	1214	59.63	9.53	289	58.72	9.97	1.46
Socio. Social Isolate Score	1081	94.17	4.88	194	93.84	4.91	0.87

** t significant at .01 level

* t significant at .05 level

Children with prior preschool experience had significantly higher pretest mean scores on the Stanford-Binet (.05 level), the total Caldwell-Soule (.01 level), and all of the Caldwell-Soule subscores. There were no significant differences on the Animal House or on any social-emotional variable except the Birch Spontaneous Response score, where children with prior experience showed lower entry performance.

The results strongly suggest that the children with prior Head Start/preschool experience had learned readiness skills that made them better prepared for cognitively oriented tasks of the type required by the Stanford-Binet and the Caldwell-Soule. In part, this advantage may have resulted from the acquisition of test-taking skills. There was evidently no corresponding advantage in the social-affective domain for the children with prior experience, and in fact the frequency of spontaneous responses to Stanford-Binet items actually decreased. All of these findings must be interpreted with caution, however, since it is not clear that the children with prior preschool experience were initially matched to the children who had not received such experience.

D. SUMMARY

Many of the child-oriented measures showed great variability, with values covering the total possible range on a number of the scales. These findings clearly demonstrate that the application of a label such as "disadvantaged" or "poor" to the Head Start enrollee does not imply a homogeneous group of children.

Despite the very real differences among the sample Head Start children, some general trends can be described. Most of the sample Head Start children in 1968-69 were black (68.17%) and two-thirds were from states outside the South. The typical enrollee (81.09%) had had no preschool experience prior to the evaluation period, and had apparently received little intellectual stimulation at home, at least as judged by the low frequency with which adults had read to him or her. Those children who did have prior Head Start or other preschool experience showed significantly higher pretest performance than other children on the Stanford-Binet and the Caldwell-Soule, but not on any social-affective measure.

Indicators of the families' socio-economic status are discussed in the next chapter; in general, these indicators show that the great majority of the sample children were from poverty families whose parents had little education.

Few of the performance measures have national norms for the general population, since most were developed specifically for Head Start. However, on both the Stanford-Binet and the Animal House subtests of the WPPSI, where national norms do exist, the sample Head Start children had pretest scores that were substantially below the general population mean (i.e., 89.04 on the Stanford-Binet compared to the national average of 100; 8.45 on the Animal House compared to an average of 10). These deviations from the national norms give evidence of the detrimental effects of the Head Start children's economic, educational, and cultural deprivation prior to Head Start enrollment.

CHAPTER VII

THEIR FAMILIES: ENTERING CHARACTERISTICS

What kinds of families and home environments did the Head Start children come from? What attitudes did the parents have about Head Start, about education, and about their own relationship with the rest of society, when their children first entered Head Start? The remainder of this chapter presents frequency distributions on several variables related to the entry characteristics of the Head Start parents and families.

A. SOCIO-ECONOMIC INDICATORS

Family Income (Table 38). Virtually all sample families (93.91%) had total yearly incomes under $8,000, and close to half (45.86%) had incomes under $4,000. It is clear that the Head Start enrollment, as required by the guidelines, drew almost entirely from the severely disadvantaged portion of the country's population.

Mother's Education (Table 39). Only about two sample mothers in five (39.55%) had completed high school. Another 54.92% of the mothers had dropped out of high school before completing the 12th grade, and over 5% finished the 6th grade or less.

Mother's Occupation (Table 40). Approximately two-fifths of the responding mothers (40.68%) had jobs. However, few of the working mothers (74 out of 360) reached the skilled worker level or higher, and 114 mothers were categorized as unskilled.

Father's Education (Table 41). Fewer than two-fifths (37.45%) of the fathers for whom information is available were recorded as having completed high school or higher. The percentage of fathers for whom no response was obtained was quite large (35.80%). It is probable that most of the missing values would have been at the low end of the educational scale, though it is not possible from the data to verify this conjecture.

Table 38

DISTRIBUTION OF VALUES ON FAMILY INCOME

	Freq.	Percentage of Non-Blanks
Over $15,000	2	0.16
$10,000 - $14,999	25	1.95
$ 8,000 - $ 9,999	51	3.98
$ 6,000 - $ 7,999	187	14.59
$ 4,000 - $ 5,999	429	33.46
$ 2,000 - $ 3,999	475	37.05
Less than $2,000	113	8.81
	N = 1282	

Table 39

DISTRIBUTION OF VALUES ON MOTHER'S EDUCATION

	Freq.	Percentage of Non-Blanks
College grad.or higher	8	0.70
Some college	72	6.31
High school graduate	371	32.54
9th - 11th grade	497	43.60
7th - 8th grade	129	11.32
4th - 6th grade	50	4.39
1st - 3rd grade	2	0.97
No school	2	0.17
	N = 1140	

Table 40

DISTRIBUTION OF VALUES ON MOTHER'S OCCUPATION (PRE)

	Freq.	Percentage of Non-Blanks
Exec. or prof.	0	0.00
Proprietor or semi-prof.	8	0.90
Admin. or small owner	5	0.57
Clerical, sales, technician	39	4.41
Skilled worker	22	2.49
Semi-skilled worker	172	19.44
Unskilled worker	114	12.87
Unemployed	525	59.32

N = 885

Table 41

DISTRIBUTION OF VALUES ON FATHER'S EDUCATION

	Freq.	Percentage of Non-Blanks
College grad. or higher	7	0.95
Some college	50	6.78
High school graduate	219	29.72
9th - 11th grade	240	32.56
7th - 8th grade	105	14.25
4th - 6th grade	66	8.96
1st - 3rd grade	38	5.16
No school	12	1.62

N = 737

Father's Occupation (Table 42). The data on this variable are somewhat difficult to interpret because of the large number (41.46%) of the fathers for whom there was no response. Only 11.01% of those for whom information is available were recorded as unemployed, but 65.77% were employed below the level of skilled worker.

B. OTHER CHILDREN IN HEAD START

Number of Children in Head Start (Table 43). Approximately one-tenth (9.59%) of the parents interviewed had one or more other children in Head Start at the same time as the one included in the evaluation sample.

Number of Children Previously in Head Start (Table 44). Over two-fifths of the sample families (41.52%) had at least one other child previously enrolled in Head Start, and 15.92% of the families had two or more children previously in Head Start.

C. PARENT ATTITUDES

Parent Attitudes Toward Head Start (Table 45). On a scale with a possible range from 0 to 200, almost nine-tenths of the sample parents (88.59%) attained the maximum value of 200 in the initial administration of the Parent Interview. This means that most parents (1) responded that their children liked Head Start; (2) named one or more specific things that their children liked about Head Start; and (3) identified specific benefits they believed the children had derived from the Head Start experience. There was evidently little room for improvement in the parents' early attitudes toward Head Start, at least according to their reponses to the initial interview.

Parent Attitude Toward Education (Table 46). This variable was based on nine items from the initial administration of the Parent Interview. The total score could range from 0 to 200, with a high score indicating a parent who expressed beliefs that (1) getting a good education is the best way to improve a person's life, (2) people with a lot of education enjoy life more than those with little education, etc. Actual scores covered virtually the entire range of values, with a heavy loading at the high-value end of the scale. The median value

Table 42

DISTRIBUTION OF VALUES ON FATHER'S OCCUPATION

	Freq.	Percentage of Non-Blanks
Exec. or prof.	0	0.00
Proprietor or semi-prof.	6	0.89
Admin. or small owner	9	1.34
Clerical, sales, technician	38	5.66
Skilled worker	103	15.33
Semi-skilled worker	184	27.38
Unskilled worker	258	38.39
Unemployed	74	11.01

N = 672

Table 43

DISTRIBUTION OF VALUES ON NUMBER OF OTHER CHILDREN IN HEAD START

Values	Freq.	Percentage of Non-Blanks
5	1	0.07
3	8	0.59
2	121	8.93
1	1226	90.41

N = 1356

Table 44

DISTRIBUTION OF VALUES ON NUMBER OF CHILDREN PREVIOUSLY IN HEAD START

Values	Freq.	Percentage of Non-Blanks
6	1	0.07
4	11	0.80
3	42	3.05
2	165	12.00
1	352	25.60
0	804	58.47
	N = 1375	

Table 45

DISTRIBUTION OF VALUES ON PARENT ATTITUDE TOWARD HEAD START (PRE)

Values	Freq.	Percentage of Non-Blanks
200	1017	88.59
166	90	7.84
150	2	0.17
133	30	2.61
100	6	0.52
66	1	0.09
50	1	0.09
0	1	0.09
	N = 1148	

Table 46

DISTRIBUTION OF VALUES ON PARENT ATTITUDE TOWARD EDUCATION (PRE)

Values	Freq.	Percentage of Non-Blanks
181 - 200	7	0.61
161 - 180	117	10.18
141 - 160	265	23.06
121 - 140	314	27.33
101 - 120	152	13.23
81 - 100	202	17.58
61 - 80	67	5.84
41 - 60	19	1.65
21 - 40	4	0.35
0 - 20	2	0.17
	N = 1149	

Table 47

DISTRIBUTION OF VALUES ON PARENT FEELING OF PERSONAL POWER (PRE)

Values	Freq.	Percentage of Non-Blanks
181 - 200	13	1.13
161 - 180	75	6.53
141 - 160	227	19.76
121 - 140	337	29.33
101 - 120	215	18.71
81 - 100	191	16.62
61 - 80	72	6.27
41 - 60	19	1.65
	N = 1149	

was around 130, indicating a generally favorable initial attitude toward education, but with room for further improvement.

Parent Feeling of Personal Power (Table 47). This variable was derived from nine items on the Parent Interview asking about how much control the parent felt she had over her environment, and particularly over her children's schools. A high score in a possible range of 0 to 200 indicates a person who expressed strong feelings of personal power, while a low score indicates a parent with feelings of powerlessness. On the initial administration of the instrument there were few parents with scores under 60, but the median was only around 120. While there are no national norms for the general population, it appears that the Head Start parents were somewhat ambivalent about their ability to control their environment and their families' lives, and had considerable room for improvement in this respect.

Parent Degree of Involvement in Community (Table 48). This derived variable was computed from six Parent Interview items asking about the degree to which parents participated in such activities as clubs, social groups, community action groups, and church groups. The possible range of values was 0 to 30, with a high score representing frequent participation in several different kinds of community groups. At the time of initial administration of the Parent Interview, parents ranged over a substantial portion of the scale, but with most scores on the low side. The median, for example, was under 9, indicating a fairly low initial level of parent involvement in organized community affairs.

Parent Feeling of Alienation (Table 49). Values on this variable were calculated from responses to five Parent Interview items that concerned the degree to which the parent felt alienated from the rest of society. A high score indicates a parent who expressed strong alienation as shows by her agreement with statements such as, "The lot of the average man is getting worse," and "These days a person doesn't know whom he can count on." The possible range was 5 to 25, and actual scores on the initial administration of the Parent Interview covered most of this range. The median value was almost 17, showing moderately strong feelings of alienation among Head Start parents at the beginning of the evaluation period.

Table 48

DISTRIBUTION OF VALUES ON
PARENT DEGREE OF INVOLVE. IN COMMUNITY (PRE)

Values	Freq.	Percentage of Non-Blanks
Above 18	6	0.53
18	3	0.26
17	5	0.44
16	19	1.65
15	13	1.13
14	36	3.13
13	40	3.48
12	113	9.83
11	81	7.05
10	154	13.40
9	128	11.14
8	234	20.37
7	121	10.53
6	189	16.45
Below 6	7	0.61
	N = 1149	

Table 49

DISTRIBUTION OF VALUES ON
PARENT FEELING OF ALIENATION (PRE)

Values	Freq.	Percentage of Non-Blanks
25 - 26	21	1.83
23 - 24	41	3.57
21 - 22	76	6.62
19 - 20	236	20.55
17 - 18	238	20.73
15 - 16	196	17.07
13 - 14	166	14.46
11 - 12	99	8.62
9 - 10	64	5.58
7 - 8	9	0.79
Below 7	2	0.18
	N = 1148	

D. SUMMARY

Most of the sample children came from low-income families with little educational background. The typical sample Head Start family had a total annual income of only around $4,000. Only about two-fifths of the mothers and the fathers on whom data could be collected, had completed a high-school education. A third of the mothers worked, but most of those had jobs at the unskilled or semi-skilled level.

Approximately a tenth of the families had other children in Head Start at the same time as the sample children, and close to half had previously had children in Head Start.

The sample parents began the evaluation period with almost uniformly favorable attitudes toward Head Start, or at least expressed such views to the interviewers. Most parents also had favorable attitudes about the value of education. They were much less optimistic and positive-thinking about their own relationships with the rest of society, however. Most expressed moderately strong feelings of alienation from society, and only a moderate level of confidence in their power to change schools and other institutions for the better. There was no strong evidence of active parent participation in social or church meetings, or in other organized community activities.

CHAPTER VIII

THE PROGRAMS

This chapter presents data on the characteristics of the sample Head Start programs in 1968-69. Some of the data were obtained by teacher interviews, and some by actual observations of the classroom activities. Several variables relate to certain relevant personal characteristics of the teachers, and to their educational, pre-service, and in-service preparation for their Head Start assignments. Other variables describe the major areas of program focus and emphasis as reported by the teachers or by independent observers. Still another set of variables relate to the instructional materials, games, and other physical resources available to teachers and children in the different Head Start classrooms. Finally, a summary is presented of anecdotal reports on teacher styles, made by classroom observers.

A. TEACHERS' PERSONAL CHARACTERISTICS[1]

Tables 50 through 52 show frequency distributions for the sample teachers' age, sex, and ethnicity.

Ages were fairly evenly distributed over the range from 22 to 45 years, with 76.70% of the teachers falling in that interval. Only 20.75% were over 45 years old, and only 2.55% were under 21.

Almost all of the sample teachers (96.48%) were female. There were almost equal numbers of black and white teachers (44.78% and 44.71%, respectively), with very small numbers of any other ethnic group.

B. TEACHERS' FORMAL EDUCATION

General Education Preparation (Table 53). Most teachers (60.89%) had a bachelor's degree or higher in general education, but only 3.19% had an advanced degree. 13.25% of the teachers had never attended college.

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[1] All teacher data in this chapter refer to the number of children having teachers of the specified characteristics; however, for convenience, percentage figures are discussed as if they referred to the teachers themselves. This should not be misleading, since class sizes were fairly uniform.

Table 50

DISTRIBUTION OF VALUES ON TEACHER'S AGE

	Freq.	Percentage of Non-Blanks
Over 57 yrs.	82	5.35
52 - 57	72	4.70
46 - 51	164	10.70
40 - 45	309	20.17
34 - 39	323	21.08
28 - 33	208	13.58
22 - 27	335	21.87
16 - 21	39	2.55
	N = 1532	

Table 51

DISTRIBUTION OF VALUES ON TEACHER'S SEX

	Freq.	Percentage of Non-Blanks
Female	1478	96.48
Male	54	3.52
	N = 1532	

Table 52

DISTRIBUTION OF VALUES ON TEACHER'S ETHNICITY

	Freq.	Percentage of Non-Blanks
Negro	686	44.78
Mexican-American	9	0.59
Puerto Rican	14	0.91
Other, White	685	44.71
American Indian	15	0.98
Oriental	54	3.52
Polynesian	19	1.24
Other	50	3.26
	N = 1532	

Table 53

DISTRIBUTION OF VALUES ON TEACHER'S GENERAL EDUCATION PREPARATION

	Freq.	Percentage of Non-Blanks
Credit above M.A.	18	1.17
M.A. degree	31	2.02
Credit beyond B.S.	393	25.65
B.A. or B.S.	491	32.05
A.A. degree	114	7.44
Some college	282	18.41
High school grad.	185	12.08
Some high school	18	1.17
	N = 1532	

Teacher's Formal Education Training in Early Childhood (Table 54). Almost two-fifths of the teachers (39.38%) had no formal training in early childhood education, while approximately the same proportion (38.38%) had some undergraduate work in the field. Only 3.72% had a bachelor's degree in early childhood work, while another 18.54% had graduate training.

C. SPECIAL TRAINING AND EXPERIENCE

Teacher's Preparatory Training for Head Start (Table 55). Over half the Head Start teachers (52.35%) had no preparatory training specifically for Head Start, and another 19.98% had less than four weeks of seminars and workshops. Only 16.80% of the teachers had two months or more of special preparation.

Teacher's Paid Experience with Disadvantaged Young (Table 56). Most of the teachers (74.22%) had no paid teaching experience with disadvantaged preschoolers prior to their Head Start work. Approximately one-fifth (21.41%) had six months of experience or more.

D. TEACHER-REPORTED AREAS OF PROGRAM FOCUS, AND MODE OF CONTROL

Child-Centered Program (Table 57). A high value on this scale would mean that the teacher designated her most important program focus as being "Child-centered," "Mental-health-oriented," "Social-experience-oriented," "Whole-child-oriented," or "Self-concept-oriented." A lower value would indicate that she selected one of these themes as a less important program focus, and a value of 0 would mean she did not give any priority to child-centered activities. The possible range of values was 0 to 30.

The children were in classes ranging fairly evenly across the scale except for small peaks at scale values of 20 and 25. The median value is around 16; this means that probably a third to a half of the teachers selected one of the child-centered themes as their primary focus and that about another third named it as their second or third most important area of concern. The traditional "whole child philosophy" was clearly still a strong influence in Head Start teachers in 1968-69.

Table 54

DISTRIBUTION OF VALUES ON
TEACHER'S FORMAL EDUC. TRAINING IN EARLY CHILDHOOD

	Freq.	Percentage of Non-Blanks
M.A. or M.S. in Early Child.	17	1.11
Grad. work in Early Child.	267	17.43
B.S. or B.A. in Early Child.	57	3.72
Undergrad. work in Early Child.	588	38.38
None	603	39.38
	N = 1532	

Table 55

DISTRIBUTION OF VALUES ON
TEACHER'S PREPARATORY TRAINING FOR HEAD START

	Freq.	Percentage of Non-Blanks
8 wks. plus seminar	112	8.11
8 wks. course	120	8.69
6-7 wks. course	37	2.68
4-5 wks. course	113	8.18
2-3 wks. course	72	5.21
Less than 2 wks.	204	14.77
None	723	52.35
	N = 1381	

Table 56

DISTRIBUTION OF VALUES ON
TEACHER'S PAID EXPER. WITH DISADVANTAGED YOUNG

	Freq.	Percentage of Non-Blanks
Over 5 years	119	7.77
4-5 years	52	3.39
1-3 years	114	7.44
6 mos. to 1 year	43	2.81
Under 6 mos.	67	4.37
None	1137	74.22
	N = 1532	

Table 57

DISTRIBUTION OF VALUES ON CHILD-CENTERED PROGRAM

Values	Freq.	Percentage of Non-Blanks
30	149	9.04
25	236	14.32
24	29	1.76
20	364	22.09
18	34	2.06
16	124	7.52
15	198	12.01
12	166	10.07
10	38	2.31
9	29	1.76
8	20	1.21
6	67	4.07
5	41	2.49
4	53	3.22
2	18	1.09
1	14	0.85
0	68	4.13
	N = 1648	

Task-Centered Program (Table 58). A high value on this scale would mean that the teacher selected one of the following terms as characterizing her primary area of program focus: "Teacher-centered," "Task-oriented," "Material-centered," "Language-oriented," "Concept-oriented," "Academically-oriented," or "Reading-oriented." Lower values would indicate that the teacher placed lower priority on these task-centered themes. Scaled scores on the variable could range from 0 to 35.

The recorded values covered the entire possible range of values. Almost a fourth (24.58%) of the children were in classes whose teachers reported no priority at all on a task-centered program. There was a fairly heavy loading of cases toward the lower third of the scale, and the median value was only around 6. It appears that even in 1968-69, classes with a heavy academic or task orientation were definitely in the minority.

Parent-Centered Program (Table 59). This derived variable is based on the teacher's answers to several questions regarding her Head Start class's attempts to involve parents in parent-teacher meetings and in child-development programs. A top value on this variable, which had a possible range of 0 to 35, would indicate that there was a parent-education program; that there were at least three meetings a month with the parents; that at least 14 parents attended two or more meetings; and that incentives such as money, prizes, or praise were used to encourage attendance.

No sample classes reached even close to the top of the scale, the highest values being 14 out of a possible 35. Over half the children (50.26%) were in classes whose teachers reported no parent-participation activities. Thus either the Head Start programs as a whole were not highly parent-centered, or the teachers were not aware of what was being done outside their own classrooms to elicit parent involvement.

Table 58

DISTRIBUTION OF VALUES ON TASK-CENTERED PROGRAM

Values	Freq.	Percentage of Non-Blanks
35	19	1.15
30	44	2.67
25	42	2.55
21	15	0.91
20	10	0.61
18	19	1.15
16	27	1.64
15	53	3.22
14	46	2.79
12	140	8.50
10	72	4.37
9	25	1.52
8	109	6.61
7	43	2.61
6	143	8.68
5	74	4.49
4	264	16.02
3	15	0.91
2	75	4.55
1	8	0.49
0	405	24.58
	N = 1648	

Table 59

DISTRIBUTION OF VALUES ON PARENT-CENTERED PROGRAM

Values	Freq.	Percentage of Non-Blanks
14	31	1.59
13	0	0.00
12	45	2.31
11	120	6.17
10	58	2.98
9	97	4.99
8	111	5.71
7	85	4.37
6	44	2.26
5	73	3.76
4	48	2.47
3	0	0.00
2	5	0.26
1	250	12.86
0	977	50.26
	N = 1945	

Language Program Emphasis (Table 60). This variable is based on several items from the Post-Program Interview with the Teacher. The items concern the number of organized instructional sessions per week that used language-related materials and procedures (e.g., Show and Tell, story period, etc.); the number of children participating in those sessions; and the length of the sessions. The scale of possible values ranged from 0-300.

Over half the children (51.95%) were in classes that placed virtually no emphasis on language-related activities (i.e., they had values between 1 and 20 scale points). The remaining classes were distributed over the rest of scale to a maximum of under 240, with a secondary peak (15.46%) at a scale value in the range of 161-180. This would correspond to a classroom that used language-related materials and procedures two or three times a week, with each session lasting from 20 to 30 minutes, over a period of six to nine months. To summarize, then, most classes provided little or no specifically organized language instruction; of those that did provide such instruction, the common procedure involved fairly brief sessions approximately every other day over the full school year.

Child Socialization (Table 61). The possible range on this derived variable was 0 to 225. A high score would mean that the teacher listed as a priority program goal one or more of the following: "Participation in small groups," "Trust of adults," "Enjoy other children," "Work and play cooperatively," "Share ideas and materials," etc. Lower scores would indicate that these goals were given lower program priority by the teachers.

The recorded values extended over the entire possible range, with a median value of around 84. Almost a fifth of the children (17.99%) were in classes whose teachers reported no priority at all on child socialization, and in general it appears that this was not a dominant concept among most Head Start teachers.

Table 60

DISTRIBUTION OF VALUES ON
LANGUAGE PROGRAM EMPHASIS

Values	Freq.	Percentage of Non-Blanks
221 - 240	19	1.18
201 - 220	63	3.90
181 - 200	91	5.63
161 - 180	250	15.46
141 - 160	90	5.58
121 - 140	52	3.22
101 - 120	91	5.63
81 - 100	66	4.05
61 - 80	36	2.22
41 - 60	19	1.18
21 - 40	0	0.00
1 - 20	840	51.95
	N = 1617	

Table 61

DISTRIBUTION OF VALUES ON CHILD SOCIALIZATION

Values	Freq.	Percentage of Non-Blanks
221 - 240	10	0.52
201 - 220	15	0.78
181 - 200	78	4.04
161 - 180	158	8.17
141 - 160	73	3.77
121 - 140	161	8.32
101 - 120	306	15.81
81 - 100	188	9.73
61 - 80	216	11.16
41 - 60	162	8.38
21 - 40	131	6.78
1 - 20	88	4.55
0	348	17.99
	N = 1934	

Independence and Self-Care (Table 62). This scale had a possible range of values from 0 to 165. A high score would mean that the teacher listed one or more of the following as priority program goals: "Go to toilet alone," "Tidiness," "Care for and pick up materials," "Put on and take off his own wraps," etc.

The recorded scores ranged over almost the entire scale, with a median value of about 15. This low median, combined with the fact that over half the children (54.49%) were in classes with scale values of under 20, shows that most teachers placed very little emphasis on fostering the children's independence and ability to care for themselves.

Type of Control Reported by Teacher (Table 63). This variable is taken from a single item in the Post-Program Interview with the Teacher. A value of 5 means the teacher reports no use of physical control of the Head Start children; 4 means she uses dirty looks or scolding; 3 means she uses taking away privileges; 2 means she uses "mild" physical control; and 1 represents "severe" physical control.

As shown in Table 63, over two-thirds of the teachers reported using no physical control, and no teachers reported severe physical control.

E. REPORTS STRUCTURED BY OBSERVERS OF CLASSROOM ACTIVITIES

1. Classroom Interactions Recorded on OSCI

From the "raw" classroom observations recorded in the Observation of Substantive Curricular Interactions (OSCI), the E&R Center at UCLA derived 60 Class Variables and 66 Teacher Variables. The Class Variables were based on observations of the activities and interactions of different groups of children in the classrooms; the focus for these observations was on what the children were doing, regardless of whether the teacher was interacting with them or directing them. The Teacher Variables were centered around the teacher's interactions with the children, and the activities in which children participated under the teacher's supervision.

Table 62

DISTRIBUTION OF VALUES ON INDEPENDENCE AND SELF-CARE

Values	Freq.	Percentage of Non-Blanks
141 - 160	16	0.83
121 - 140	14	0.72
101 - 120	10	0.52
81 - 100	46	2.37
61 - 80	139	7.19
41 - 60	324	16.76
21 - 40	331	17.12
1 - 20	433	22.38
0	621	32.11
	N = 1934	

Table 63

DISTRIBUTION OF VALUES ON TYPE OF CONTROL USED BY TEACHER

Values	Freq.	Percentage of Non-Blanks
5	1020	66.75
4	144	9.42
3	109	7.13
2	255	16.69
	N = 1528	

Subsequently, data on the Class Variables and Teacher Variables were statistically analyzed to define six Class Factors and six Teacher Factors. The factor scores were calculated in such a manner that all had essentially the same means and standard deviations; thus they do not reflect actual differences in degree of program emphasis on different types of classroom activity. To show these differences, frequency distributions have been computed for the OSCI variable with the highest loading on each of the 12 factors. These frequency distributions are shown in Tables 64-75. The values on each OSCI variable represent the actual frequencies of observed occurrence of the particular activities involved. During the evaluation period there were 864 possible opportunities for each type of class-oriented activity to be observed, so the possible range of values on each of the six Class Variables is 0 to 864. There were fewer observation periods related to teacher-oriented activities; the possible range on each Teacher Variable is 0 to 576.

a. Class Variables

(1) Programmed Materials Variable (Table 64). This variable showed the highest loading on the "Structured Lessons" Class Factor. It indicates the frequency of observations of children working with programmed learning materials; i.e., materials with a high degree of structure and designed to lead the learner by small steps through a sequence of prespecified learning objectives.

In Table 64 (and in all subsequent OSCI tables), the units under the "Frequency" column are classes, rather than individual children. Each entry in this column refers to the number of classes (out of a possible 137) which had values on the "Programmed Materials" variable within the specified range. Because of the large concentration of low values, intervals of 10 are used at the low end of the scale for all Class Variables; the interval size is increased to 50 for values above 49.

As Table 64 shows, over half the classes made virtually no use of programmed materials (values of 0-9 out of a possible 864). For convenience in comparing the distributions of the OSCI variables, a 20% frequency level will be used

Table 64

DISTRIBUTION OF VALUES ON
OSCI CLASS VARIABLE - PROGRAMMED MATERIALS

Values	Freq.	Percentage of Non-Blanks
Above 499	4	2.92
450 - 499	10	7.30
400 - 449	1	0.73
350 - 399	3	2.19
300 - 349	3	2.19
250 - 299	4	2.92
200 - 249	4	2.92
150 - 199	5	3.65
100 - 149	1	0.73
50 - 99	13	9.49
40 - 49	1	0.73
30 - 39	2	1.46
20 - 29	4	2.92
10 - 19	8	5.84
0 - 9	74	54.01
	N = 137	

as a reference point. That is, in what percentage of classes did the activity in question occur (on the average) at least once in every five observations? The 20% level thus corresponds to an observed frequency of approximately 173. From Table 64 it can be seen that the use of programmed materials reached or exceeded the 20% level in slightly under a fourth of the classes.

(2) Social-Physical Activities Variable (Table 65). This Class Variable showed the highest loading on the Class Factor called "Group Activities and Routines." Values on the variable indicate observed occurrences of nonverbal social interactions that involve physical contact, whether positive or punitive. The interactions occurred while the children were playing with blocks, eating, cleaning up, etc.

A comparison of Tables 64 and 65 shows that these group activities involving social and physical interactions were more common than the use of programmed materials. The 20% level on the Social-Physical Activities variable was reached or exceeded by approximately two-fifths of the classes, and there was no concentration of values at the lowest extreme of the scale, as was found with the "Programmed Materials" variable.

(3) Social Emotional Interaction (Table 66). This variable had the highest loading on the Class Factor, "Social Emotional Interaction." It designates the frequency of undesirable emotional behavior by the children in all observed contexts, e.g., eating, study, painting, etc. Examples of the behavior include crying, fighting with each other, etc.

Very little emotional behavior was recorded, with over 70% of the classes showing essentially no incidents of such behavior (i.e., values of 0 to 9 out of a possible maximum of 864). No classes reached the 20% level on the Social Emotional Interaction variable.

(4) Verbal Communication/Activities (Table 67). The associated Class Factor for this variable was "Verbal Communication." This variable refers to language

Table 65

DISTRIBUTION OF VALUES ON OSCI CLASS VARIABLE - SOCIAL-PHYSICAL ACTIVITIES

Values	Freq.	Percentage of Non-Blanks
Above 499	0	0.00
450 - 499	0	0.00
400 - 449	2	1.46
350 - 399	5	3.65
300 - 349	7	5.11
250 - 299	7	5.11
200 - 249	17	12.41
150 - 199	32	23.35
100 - 149	30	21.90
50 - 99	26	18.98
40 - 49	3	2.19
30 - 39	4	2.92
20 - 29	2	1.46
10 - 19	1	0.73
0 - 9	1	0.73
	N = 137	

Table 66

DISTRIBUTION OF VALUES ON OSCI CLASS VARIABLE - SOCIAL EMOTIONAL INTERACTION

Values	Freq.	Percentage of Non-Blanks
Above 499	0	0.00
450 - 499	0	0.00
400 - 449	0	0.00
350 - 399	0	0.00
300 - 349	0	0.00
250 - 299	0	0.00
200 - 249	0	0.00
150 - 199	0	0.00
100 - 149	0	0.00
50 - 99	3	2.19
40 - 49	1	0.73
30 - 39	3	2.19
20 - 29	10	7.30
10 - 19	23	16.79
0 - 9	97	70.80
	N = 137	

Table 67

DISTRIBUTION OF VALUES ON
OSCI CLASS VARIABLE - VERBAL COMMUNICATION/ACTIVITIES

Values	Freq.	Percentage of Non-Blanks
Above 499	0	0.00
450 - 499	0	0.00
400 - 449	0	0.00
350 - 399	0	0.00
300 - 349	0	0.00
250 - 299	0	0.00
200 - 249	0	0.00
150 - 199	1	0.73
100 - 149	6	4.38
50 - 99	19	13.87
40 - 49	7	5.11
30 - 39	8	5.84
20 - 29	12	8.76
10 - 19	26	18.98
0 - 9	58	42.33
	N = 137	

used in unstructured teacher-child or child-child discussions, as contrasted with specific language-development activities.

As seen in Table 67, there was fairly little unstructured verbal communication, at least as recorded during the observation sessions. Over two-fifths of the classes were in the lowest category of occurrence (0-9), and only one class reached the 20% level.

(5) Visual-Motor/Activities (Table 68). This variable, which had the highest loading on the Class Factor called "Instruction in Creative Arts," indicates the observed frequency of activities that combined both visual discrimination and manual dexterity (e.g., working puzzles). The distribution of values is somewhat unusual, with only about 16% of the classes placing in the lowest range of values (0-9), and over 30% placing in the range of 50 to 99. In general, there appears to have been a fairly even distribution of occurrences up to about 149 occurrences, and then a sharp drop-off above that point. Only five classes reached the 20% level.

(6) Language Materials (Table 69). This variable showed the highest loading on the "Language and Discrimination Learning" Class Factor. Values on the variable indicate the extent of class use of materials designed to teach language skills.

As Table 69 shows, there was a moderate level of use of language materials. Over 60% of the classes had between 50 and 149 observed uses of such materials, and 22 classes reached the 20% level of occurrence.

b. Teacher Variables

Tables 70-75 show frequency distributions (with classes as the units of observation) for the six Teacher Variables with the highest loadings on the Teacher Factors. Intervals of 5 are used at the low end of the scale for all Teacher Variables; the interval size is increased to 50 for values above 49. The possible range of values for each Teacher Variable was 0 to 576.

Table 68

DISTRIBUTION OF VALUES ON OSCI CLASS VARIABLE - VISUAL-MOTOR/ACTIVITIES

Values	Freq.	Percentage of Non-Blanks
Above 499	0	0.00
450 - 499	0	0.00
400 - 449	0	0.00
350 - 399	1	0.73
300 - 349	0	0.00
250 - 299	1	0.73
200 - 249	1	0.73
150 - 199	3	2.19
100 - 149	17	12.41
50 - 99	43	31.39
40 - 49	11	8.03
30 - 39	16	11.68
20 - 29	14	10.22
10 - 19	8	5.84
0 - 9	22	16.05
	N = 137	

Table 69

DISTRIBUTION OF VALUES ON OSCI CLASS VARIABLE - LANGUAGE MATERIALS

Values	Freq.	Percentage of Non-Blanks
Above 499	0	0.00
450 - 499	1	0.73
400 - 449	0	0.00
350 - 399	1	0.73
300 - 349	0	0.00
250 - 299	5	3.65
200 - 249	9	6.57
150 - 199	11	8.02
100 - 149	38	27.73
50 - 99	45	32.86
40 - 49	6	4.38
30 - 39	5	3.65
20 - 29	6	4.38
10 - 19	5	3.65
0 - 9	5	3.65
	N = 137	

(1) Emotional/All Contexts (Table 70). This variable had the highest loading on the "Social Emotional Interaction" Teacher Factor. It includes all observed occurrences of undesirable emotional behavior on the part of children in the presence of a teacher, such as fighting, crying, yelling, etc.

Reported incidents of undesirable emotional behavior were rare. In almost two-thirds of the classes, fewer than five such occurrences were reported out of 576 observations; no classes reached the 20% level (i.e., 115 occurrences).

(2) Language/Structured Lesson (Table 71). This variable designates the teacher's use of structured lessons to develop spoken language. More specifically, these activities included elements of labeling, elaboration, correction, or the introduction of new vocabulary. The variable had the highest loading on the Teacher Factor called "Structured Lessons-Large Group."

Structured language instruction was fairly common, as reflected by the fact that 38 classes reached the 20% level of frequency. Even so, in over a fourth of the classes, virtually no occurrences of structured language lessons (i.e., from 0 to 4 cases) were reported.

(3) Art/Painting (Table 72). This variable, which showed the highest loading on the "Art Activities" Teacher Factor, designates the number of observed occurrences of children's participation in art activities, specifically painting. Only three classes reached the 20% level of occurrence, but over a fourth of the classes (38 out of 137) had between at least 50 occurrences. While the overall level was not particularly high, a fair amount of painting activity was observed in most classes.

(4) Small-Group Instruction (Table 73). A wide range of activities was included in this variable, such as visual-motor tasks, social-verbal interactions, use of large-muscle equipment, use of science materials, etc.; the distinguishing feature was that these activities were conducted under close teacher supervision in groups of one to four children. This variable had the highest loading on the "Creative Instruction--Small Group" Teacher Factor.

Table 70

DISTRIBUTION OF VALUES ON
OSCI TEACHER VARIABLE - EMOTIONAL/ALL CONTEXTS

Values	Freq.	Percentage of Non-Blanks
Above 349	0	0.00
300 - 349	0	0.00
250 - 299	0	0.00
200 - 249	0	0.00
150 - 199	0	0.00
100 - 149	0	0.00
50 - 99	0	0.00
45 - 49	1	0.73
40 - 44	1	0.73
35 - 39	0	0.00
30 - 34	0	0.00
25 - 29	3	2.19
20 - 24	7	5.11
15 - 19	7	5.11
10 - 14	11	8.03
5 - 9	20	14.60
0 - 4	87	63.50
	N = 137	

Table 71

DISTRIBUTION OF VALUES ON
OSCI TEACHER VARIABLE - LANGUAGE/STRUCTURED LESSON

Values	Freq.	Percentage of Non-Blanks
Above 349	1	0.73
300 - 349	5	3.65
250 - 299	9	6.57
200 - 249	9	6.57
150 - 199	6	4.38
100 - 149	11	8.03
50 - 99	14	10.22
45 - 49	2	1.46
40 - 44	4	2.92
35 - 39	4	2.92
30 - 34	4	2.92
25 - 29	2	1.46
20 - 24	6	4.38
15 - 19	10	7.30
10 - 14	9	6.57
5 - 9	4	2.92
0 - 4	37	27.00
	N = 137	

Table 72

DISTRIBUTION OF VALUES ON
OSCI TEACHER VARIABLE - ART/PAINTING

Values	Freq.	Percentage of Non-Blanks
Above 349	0	0.00
300 - 349	0	0.00
250 - 299	0	0.00
200 - 249	0	0.00
150 - 199	0	0.00
100 - 149	5	3.65
50 - 99	33	24.08
45 - 49	7	5.11
40 - 44	10	7.30
35 - 39	9	6.57
30 - 34	11	8.03
25 - 29	11	8.03
20 - 24	9	6.57
15 - 19	10	7.30
10 - 14	12	8.76
5 - 9	6	4.38
0 - 4	14	10.22
	N = 137	

Table 73

DISTRIBUTION OF VALUES ON
OSCI TEACHER VARIABLE - SMALL GROUP INSTRUCTION

Values	Freq.	Percentage of Non-Blanks
Above 349	0	0.00
300 - 349	3	2.19
250 - 299	15	10.95
200 - 249	21	15.33
150 - 199	36	26.28
100 - 149	35	25.55
50 - 99	22	16.05
45 - 49	0	0.00
40 - 44	2	1.46
35 - 39	0	0.00
30 - 34	1	0.73
25 - 29	0	0.00
20 - 24	0	0.00
15 - 19	1	0.73
10 - 14	1	0.73
5 - 9	0	0.00
0 - 4	0	0.00
	N = 137	

Table 73 indicates that small-group instruction was quite common. In 95 classes (over two-thirds of the total), observed occurrences reached the 20% level, and in only 5 classes was small-group instruction observed fewer than 50 times. In 18 classes it occurred at least 250 times during observations.

(5) Mechanical/Activities (Table 74). The activities included in this variable, which was associated with the "Routines" Teacher Factor, were performed routinely or mechanically (e.g., drillwork, exercises). Such activities were not common, as indicated in Table 74 by the fact that no classes reached the 20% level.

(6) Language/Watching-Listening (Table 75). In the activities included in this variable, the children were intended to learn spoken language by watching and listening (e.g., watching a movie, or listening to an adult telling a story). The variable had the heaviest loading on the "Receptive Learning" Teacher Factor.

Occurrences of this passive learning mode were observed with moderately low frequency. Only one class reached the 20% level, and in almost a fourth of the classes, such activities occurred fewer than 5 times out of a possible 576.

2. Ratings of Teacher Behaviors

Teacher's Quality of Cognitive Input (Table 76). This variable was derived from several items in the Post Observation of Teacher, in which an observer characterized the teacher's activities. The possible range of values was 0 to 30, with a high score indicating a teacher observed "constantly" or "frequently" in the following kinds of activities: "Stress of verbs," "Multi-sensory stimulation," "Acceptance of alternate answers," "Emphasize

Table 74

DISTRIBUTION OF VALUES ON
OSCI TEACHER VARIABLE - MECHANICAL/ACTIVITIES

Values	Freq.	Percentage of Non-Blanks
Above 349	0	0.00
300 - 349	0	0.00
250 - 299	0	0.00
200 - 249	0	0.00
150 - 199	0	0.00
100 - 149	0	0.00
50 - 99	12	8.76
45 - 49	2	1.46
40 - 44	7	5.11
35 - 39	10	7.30
30 - 34	15	10.95
25 - 29	11	8.03
20 - 24	12	8.76
15 - 19	16	11.68
10 - 14	22	16.05
5 - 9	14	10.22
0 - 4	16	11.68
	N = 137	

Table 75

DISTRIBUTION OF VALUES ON
OSCI TEACHER VARIABLE - LANGUAGE/WATCHING-LISTENING

Values	Freq.	Percentage of Non-Blanks
Above 349	0	0.00
300 - 349	0	0.00
250 - 299	0	0.00
200 - 249	0	0.00
150 - 199	0	0.00
100 - 149	2	1.46
50 - 99	22	16.05
45 - 49	8	5.84
40 - 44	6	4.38
35 - 39	4	2.92
30 - 34	14	10.22
25 - 29	6	4.38
20 - 24	8	5.84
15 - 19	13	9.49
10 - 14	10	7.30
5 - 9	10	7.30
0 - 4	34	24.82
	N = 137	

Table 76

DISTRIBUTION OF VALUES ON TEACHER'S QUALITY OF COGNITIVE INPUT

Values	Freq.	Percentage of Non-Blanks
28.1 - 30.0	13	0.67
26.1 - 28.0	10	0.52
24.1 - 26.0	57	2.95
22.1 - 24.0	78	4.03
20.1 - 22.0	79	4.09
18.1 - 20.0	148	7.62
16.1 - 18.0	169	8.70
14.1 - 16.0	181	9.32
12.1 - 14.0	326	16.79
10.1 - 12.0	161	8.29
8.1 - 10.0	285	14.68
6.1 - 8.0	173	8.90
4.1 - 6.0	148	7.63
2.1 - 4.0	89	4.58
0.1 - 2.0	24	1.23
	N = 1941	

analytic attitude," etc. Lower values mean the activities were observed "occasionally" or "infrequently."

Observed values covered virtually the entire range, and the median value was about 12.4. This means that, on the average, most of the activities characterized as representing desirable cognitive input to the children were "occasionally" observed, but there were substantial variations among classes.

Teacher's Concern for Child (Table 77). A high score on this scale means that a teacher was observed "constantly" or "frequently" in activities such as "Teacher response to individuals," "(Providing) choice of activities," "Teacher direction of play activity," "(Teaching) respect for property and ideas," "Teacher awareness of pupil frustration," and "Teacher administer to need." Lower scores indicate "occasional" or "infrequent" observations of these activities.

The possible range of values was 0 to 36, and the actual scores covered almost that entire range. The median value was about 18; this value corresponds to "occasional" observations of the activities interpreted as showing concern for the individual child.

F. CLASSROOM MATERIALS AND EQUIPMENT

Cognitive Materials (Table 78). Materials in this category include learning games, aquaria, tape recorders, science materials, special teaching devices, books, etc. A high score on this derived variable, which has a possible range from 0 to 38, would indicate that adequate quantities of these materials were observed in good condition. Lower scores would indicate that certain items were missing, in short supply, or in poor condition.

Table 77

DISTRIBUTION OF VALUES ON TEACHER'S CONCERN FOR CHILD

Values	Freq.	Percentage of Non-Blanks
28.1 - 30.0	98	5.05
26.1 - 28.0	81	4.17
24.1 - 26.0	114	5.88
22.1 - 24.0	178	9.18
20.1 - 22.0	310	15.99
18.1 - 20.0	280	14.42
16.1 - 18.0	305	15.71
14.1 - 16.0	156	8.02
12.1 - 14.0	200	10.30
10.1 - 12.0	86	4.43
8.1 - 10.0	73	3.76
6.1 - 8.0	31	1.60
4.1 - 6.0	29	1.49
	N = 1941	

Table 78

DISTRIBUTION OF VALUES ON COGNITIVE MATERIALS

Values	Freq.	Percentage of Non-Blanks
Above 30	14	0.91
29 - 30	53	3.43
27 - 28	87	5.63
25 - 26	118	7.64
23 - 24	253	16.37
21 - 22	154	9.97
19 - 20	101	6.53
17 - 18	101	6.53
15 - 16	169	10.94
13 - 14	143	9.26
11 - 12	147	9.51
9 - 10	43	2.79
7 - 8	136	8.80
5 - 6	14	0.91
Below 5	12	0.78
	N = 1545	

The recorded data indicate that classes varied considerably, with most in the middle ranges on the scale. The median value was almost at midpoint on the scale, indicating that overall, the children had only moderate access to cognitively oriented materials and equipment.

Large-Muscle Equipment (Table 79). Scores on this derived variable could range from 0 to 20; a high score would indicate that a class was observed to have the following kinds of materials and equipment in sufficient quantity and in good condition: packing boxes, slides, swings, wheeled toys, and balls.

The sample classes varied over almost the entire range of values. The median value was around 12, indicating that most classes were moderately well supplied with at least the basic play equipment.

Sensory-Motor Materials (Table 80). These classroom materials include waterplay equipment, small blocks, puzzles, sensory aids, and other articles designed to aid children's sensory-motor development and coordination. A high score on this derived variable, which had a possible range from 0 to 26, would indicate that adequate quantities of most types of this equipment were observed in good condition. Classes varied widely, with a median value around 13. This indicates that the typical classroom had moderate quantities of at least some types of sensory-motor materials.

G. OBSERVERS' ANECDOTAL RECORDS

Preceding sections present a statistical view of the Head Start programs, based on the common core data collected by all E&R Centers. It may be useful at this point to present a different perspective, based on more informal, anecdotal evidence about what went on in the Head Start classrooms as interpreted by teams of observers who visited many of the sites.

Table 79

DISTRIBUTION OF VALUES ON LARGE-MUSCLE EQUIPMENT

Values	Freq.	Percentage of Non-Blanks
19 - 20	93	6.06
17 - 18	148	9.65
15 - 16	379	24.72
13 - 14	135	8.81
11 - 12	360	23.49
9 - 10	293	19.11
7 - 8	75	4.89
5 - 6	10	0.65
3 - 4	17	1.12
1 - 2	23	1.50
	N = 1533	

Table 80

DISTRIBUTION OF VALUES ON
SENSORY-MOTOR MATERIALS

Values	Freq.	Percentage of Non-Blanks
25 - 26	17	1.10
23 - 24	116	7.50
21 - 22	65	4.21
19 - 20	89	5.76
17 - 18	58	3.76
15 - 16	327	21.16
13 - 14	176	11.38
11 - 12	233	15.08
9 - 10	202	13.07
7 - 8	106	6.87
5 - 6	94	6.09
3 - 4	62	4.02
	N = 1545	

These observers judged each classroom on each of seven developmental goals. The goals were defined as:

- Sensory - motor development (improvement in visual and hearing sensitivity, muscle development, and coordination)

- Language development (improvement in grammar, vocabulary, communication skills, and understanding of speech)

- Group and social skills development (improvement in cooperation behavior, ease in working with others, learning rules and accepting group goals)

- Concept development (improvement in handling and acquiring such concepts as time, color, size, and functional relations)

- Academic skill development (improvement in word-recognition, writing, drawing, etc.)

- Self-esteem development (improvement in the sense of self-worth, self-acceptance, capacity to change the environment, and self-confidence)

- Motivational development (improvement in interest in learning and achievement).

A five-point rating scale was used to assess the extent to which these goals were emphasized in the curricular of the classes. The scale was defined as follows:

1. Very strong emphasis

   Observed some structured activity relevant to this goal in almost every visit to the classroom.

2. Moderately strong emphasis

   Observed some structured activity relevant to this goal in over 60% of the visits to the classroom.

3. Some emphasis

   Observed some structured activity relevant to this goal in about 30-50% of the visits.

4. Very little emphasis

   Observed structured activity relevant to this goal in less than 20% of the visits to the class.

5. No emphasis

   Cannot recall any structured activity directed to this goal during class visits.

Table 81 shows a summary of observational data from classes in eight of the E&R Centers. The goals are listed in decreasing order of their average rankings across all eight Centers. Language Development received the highest overall rating, indicating that classroom activities related to the enhancement of language skills were observed more often than activities in any other developmental area. Group and Social Skills were also highly represented in the observed classroom activities, but with that exception, all of the top-rated developmental areas related to skill-training and cognitive development. The two major areas of affective development (i.e., Motivational Development and Self-Esteem Development) received the lowest ratings. Thus, as interpreted by these observers, most teachers were more academically oriented than affect-oriented. This finding seems to conflict somewhat with the teachers' own reports of their program emphasis (see Section D, above) which indicated that they focused more on the children's personal needs than on academic or cognitive goals. Care must be taken in interpreting the observers' reports, however, since there were many uncontrolled variations in the timing and frequency of

Table 81

AVERAGE OBSERVER RATINGS FOR CLASSES IN EIGHT E&R CENTERS, ON SEVEN DEVELOPMENTAL GOALS

	E&R CENTER							
GOAL	1	2	3	4	5	6	7	8
Language Development	1.4	2.1	2.4	1.7	2.7	2.7	2.0	2.0
Group and Social Skills Dev.	2.0	1.8	2.2	2.3	2.7	1.7	2.7	2.7
Concept Development	1.9	3.0	2.3	2.1	2.9	2.6	2.2	2.9
Academic Skill Development	1.9	2.7	3.1	2.0	2.9	3.0	2.9	3.8
Sensory-Motor Development	1.7	2.1	2.4	2.6	2.9	3.0	3.1	3.3
Motivational Development	2.6	2.1	3.3	1.9	3.5	2.8	3.0	3.8
Self-Esteem Development	2.2	2.8	3.1	2.6	3.6	3.0	2.9	3.6

the observations, in the number of observers who made independent ratings of each classroom, etc. The ratings are shown here primarily to indicate the variability among E&R Centers. For example, the Motivational Development Goal had an average rating that ranged from 1.9 (moderately strong emphasis) in Center #4, to 3.8 (very little emphasis) in Center #8.

Probably the most interesting aspects of the observers' reports were their anecdotal comments on the teachers and the classroom activities. These comments help to illustrate more meaningfully the differences in coping-style of different teachers, and of the teachers' effects on the children. For example in one class which was rated high on Concept Development and Academic Skill Development, but low on Motivational Development and Self-Esteem Development, the teacher was described as follows:

> "Mrs. Z. relies heavily upon the Montessori educational toys. She is at her best when teaching with this equipment in small groups. Unfortunately there is very little attempt to contact children outside the learning situation, i.e., she is not a teacher who talks to the children about their

> emotions or experiences, but rather emphasizes the learning of their A's, B's, and C's and in these situations she is at her best. Her lack of emphasis on interpersonal relationships does not mean that she does not work hard with the children--she does. She is constantly moving from group to child to group in order to help them learn. This emphasis on cognitive learning leaves the atmosphere rather rigid and there is very little interaction between the children and their peer group, for they are teacher-oriented. In conclusion I would say that the best part of the class was the use of the Montessori equipment to develop cognitive functions. The worst part was the fact that the Montessori equipment fostered a lack of creativity and a lack of interaction among the children."

Here is a description of another teacher in a class rated high on Language Development and also on Sensory-Motor Development:

> "On the whole, Teacher X had a disciplined and quiet class. She had a rather formal view of education, a mini-grammar school atmosphere. Every morning the children gathered together in a group where each was tested as to his knowledge of words and spellings. She emphasized children's ability to communicate, giving them tasks such as to describe to the class what they had done over the weekend. As in public school she pretty much separates the learning process, i.e., vocabulary, math, etc., from the creative process, i.e., painting, basket-making, etc. She seems to feel that her job as teacher ends after she has taught the children their A's, B's, and C's in a group, and her job as supervisor begins when they are creating things or working on their own. This has both good and bad points to it. The children have learned their vocabulary and numbers very well, but they are not that able to incorporate what they have learned into whatever they do. In general the atmosphere of the class is comfortable if not exactly exciting. She interacts with the children on a group basis rather than individually, but when a child needs individual attention she does give it to him and is very nice with the child. She uses isolation as a punishment for the children who act up, but since she is a placid and rather even-tempered person, punishment is rare. I never saw her truly enthusiastic nor very angry."

Other teachers placed greater emphasis on Group and Social Development and Self-Esteem Development, and less on cognitive skills. These classes were often less structured than the academically oriented classes; sometimes the results were successful and sometimes they were unsuccessful, depending on the individual teacher's capabilities, as shown in these examples:

> "The children in Miss F's Head Start class seemed a lot happier than children in other Centers which I observed. With the exception of about two children, the teacher-child relationship was excellent. The children loved their teacher. During free play the teacher let the children make enough noise to let off pent-up energy--only when it was extremely noisy would she ask for quiet. Anyone making excessive noise after this time would be yanked by the arm and sat in the corner; if they cried they would be taken to the restroom (crying room) until they calmed down. This was the only form of punishment (discipline). The best thing about this class seemed to be the mutual love between all the children. All the children loved each other and they all interacted with each other. There seemed to be only one or two occurrences of a special friend. Most of the time they got along with each other very well. These children are on the road to non-race prejudice if it can only be fostered in the grade school also."

> "Compared to the other classes at this Center, these classes were far less structured, had more peer interaction and were rather chaotic. There seemed to be a high level of frustration which showed itself in a steady series of fights that broke out. The morning class particularly was a difficult class with a high ratio of actively disturbed children who were constantly acting up. Miss Y was not a "discipline" teacher, and seemed unable to control her class. She was a warm person and had a very nice relationship with most of her children. An example of this was when I saw her one day as she sat with one of the most disturbed children in her lap. She was sitting outside the classroom in an isolated corner, just sitting with this child who obviously needed comforting. This incident shows both her good points and her bad points as a teacher. She is a warm, caring person who can become totally involved with a child when he needs her; on the other hand, she has a tendency to concentrate on one child while forgetting about the rest of the class. This can create chaos in the classroom. The children are not so independently involved in the Montessori equipment as in other classrooms; they are all most interested in getting attention from Miss Y. There is a very basic lack of structure which creates tension and confusion among the children. On the other hand, there is a lot of peer-group interaction which I felt was good."

> "The children in this class had two great needs which had to be answered before any teaching would be really successful. One, they needed to trust their teacher, that is they needed to know that they could get all the affection and "loving" they wanted but that she would be firm when it was necessary. Second, they needed to be able to run off and act out all their problems and frustrations. In this class both of these things were dealt with more than amply. And yet there was enough order so that the class did not appear chaotic. The academic side was not neglected but it was not stressed as much as it would have been in a class where the children have fewer emotional needs."

Most observers were impressed by the importance of the individual teacher's personality in dealing with the children, and frequently commented on the visible effect of different teacher styles, as shown in this example:

> "This class had three different teachers during the course of the year. Since all three teachers were very different in personality and techniques, the class faced many readjustments. The present teacher began by being very controlling. By this time she is no longer as rigid in her controls, but the children make few decisions other than choosing from the activities offered during free play. The teacher's concern with good behavior and quietness may in part be determined by the echoing quality of her classroom. It is a class with some overactive boys, and many highly individualistic children, so the room is not as quiet and orderly as one might expect from the teacher's efforts. Control and discipline are mainly verbal. She keeps the children sitting down, depriving them of an activity, or (rarely) depriving them of snacks. The activity was often orderly, but not particularly goal-directed except to keep the children busy. The number and variety of activities this teacher offers are strong points. She can tolerate messy activities like water play, soapsuds, clay and planting. The teacher's inability to see the children as individuals, with individual needs, is a weak point. When the children are in the yard she spends most of her time worrying about various physical hazards. There also seems to be a high ratio of fights breaking out. I notice that the class seemed very 'cliquey' and threatened by our visits."

An important area of variability among classes was in the focus of control over the children's classroom activities. In many classes, these activities were almost entirely teacher-directed, while in others, the children were encouraged to be more self-directed. The range of teacher styles on this dimension is illustrated by the following examples:

> "In observing this class, there were many favorable factors employed by the teacher, teacher aide, and children. The activities were mostly teacher-controlled because the teacher would set up the activities and the children would have to work with them. After each activity had been set up, one of the teachers (teacher or teacher aide) would supervise each activity. They would tell the children exactly the things they had to do and how to do them. There were several disciplinary problems encountered during this time but the teacher was able to handle them. She would talk with the children involved in the disciplinary situations and point out good examples of behavior."

> "The class was largely teacher-controlled. Mrs. C relates easily to the children and accepts them as individuals but (lacking training) expects more quiet and good behavior than is appropriate for this age. Control attained mostly through reasoning. Her strongest goal seemed to be to prepare them for 1st grade by learning the alphabet--not quite far-enough reaching."

> "This class was entirely structured, due to the nature of the language intervention program; hence children's freedom of choice was built-in. Good example of freedom within limits. Enthusiasm for the material (teacher-inspired) and motivation for learning (program and teacher inspired) kept the class orderly and quiet. After the first two weeks, I never saw any need for discipline."

> "The children had freedom to make decisions; but usually within the framework of a teacher-controlled situation. During free play periods she was never concerned with quietness; but I think good behavior was always a concern. Possibly her expectations were more appropriate to a slightly older age group than pre-school but the children rarely disappointed her."

> "This class was freely organized so that all the children would have much self-directed activity. Individual expression and creativity was encouraged even in the structured activities. For instance, children learned to act out various stories whatever way they wanted to. Cooperation and consideration for others developed throughout the year."

The relationships between the teacher and the classroom aide were also found to vary from one class to another. In many classes the instruction was focused almost entirely around the teacher, with the aide playing a purely secondary role, as exemplified by this observer's report:

> "The head teacher encouraged the children to make decisions. The aide took no real initiative in the classroom in teaching situations. The main differentiating factor of this class was the emphasis on group and social skills which came out of pre-planning and forethought. The environment was a very free and accepting one, which encouraged a child's self-expression. There was not a great deal of cognitive program structuring."

In other classes, by contrast, the teacher and the aide shared the instructional responsibilities:

> "The teacher and aide have worked together for several years and are very well coordinated. They divide up the classroom demands in such a way that the teacher is able to pay extra attention to those children who need something special. The needs of each child are perceived by the teacher and her demands of them relate to their abilities. I learned a great deal about teaching from this teacher in comparison to others. It was a pleasure to work with the teacher and the delightful children."

To summarize, there were many variations in the different teachers' styles of interacting with the children, of structuring the learning situations, of managing classroom resources, and of coping with the problems of maintaining discipline. These interaction styles were often described in the reports as having had important implications for the children's development. What many observers apparently found most critical, however, was not the teacher's overall approach, but her individual ability to implement that approach in a consistent, effective manner.

H. SUMMARY

Virtually all sample Head Start teachers were female, and most were between 25 and 45 years old. There were almost exactly even numbers of black and white teachers (about 45% each).

The Head Start teachers as a whole had a moderate level of general education preparation; about 60% had a bachelor's degree, but 13% had never attended college. Their formal education specifically in early childhood was fairly limited. About two-fifths had no college training in this field, and another 38% had less than a bachelor's degree in early childhood education or related fields.

Over half the sample teachers reported that they had received no special preparatory training for Head Start prior to the time they began teaching Head Start classes; another fifth of the teachers reported less than four weeks of training. Only a fourth of the sample teachers reported prior (non-Head Start) paid experience in teaching disadvantaged preschool children.

In brief, it appears that the typical Head Start teacher had a moderate level of general education, but quite limited education, training, and experience specifically in the type of work represented by the Head Start teaching assignment.

How did teachers characterize their own teaching? To what program goals did they assign highest priority? Although there was considerable variability among teachers in these areas, the typical teacher reported her class to be predominantly child-centered and oriented toward the children's mental health and positive self-image. Few teachers considered their classes to be primarily task-centered; this finding is of considerable importance in view of research findings (see Chapter II) that structured programs (which tend to be task-centered) achieve higher child gains, at least on cognitive measures, than unstructured programs.

As rated in structured observation forms by independent observers, the Head Start teachers varied substantially in their quality of cognitive input and their concern for the individual child, but the median values on both variables were near the center of the scales. Thus the data from the observations do not appear to substantiate the teachers' own reports about their program emphases and priorities, from which one might have expected much higher ratings on "Concern for Child" than on "Quality of Cognitive Input".

Further evidence on what activities were actually observed in the classrooms comes from the frequency distributions of 1[illegible] variables from the Observation of Substantive Curricular Interactions (OSCI). The most common types of activities, according to these data, were social activities involving direct physical contacts among children; use of language materials designed to teach verbal skills; and teachers' use of small-group instructional techniques. At the other end of the scale, there were virtually no observed occurrences of undesirable emotional behavior such as crying, fighting, screaming, or temper tantrums on the part of the children. At an intermediate level, in terms of frequency of occurrence, were activities such as unstructured teacher-child or child-child discussions; language learning by use of structured participatory lessons or by having the children watch and listen; use of programmed instructional materials; and painting.

Wide variability was observed in the physical resources of the individual Head Start centers and classes. Ratings of the classes' quantity and condition of cognitive oriented materials, large-muscle exercise equipment, and sensory-motor materials, all varied over most of the possible ranges on those scales. The median values in all cases were essentially at midpoint on the scales, indicating moderate overall availability of materials.

The anecdotal reports by classroom observers suggest that there are many important nuances of the classroom interactions and of the teachers' coping styles that may be inadequately represented in any of the common core measures, despite efforts to select the best available instruments. Excerpts from several of these reports were presented in this chapter, in the hope that they will convey something of the complexity and dynamic nature of the actual Head Start classrooms.

CHAPTER IX

GAINS ASSOCIATED WITH HEAD START

The issue addressed by this chapter is whether there were significant changes in the performance of the sample Head Start children, and in the attitudes and behavior of their parents, that can be associated with the children's participation in Head Start. Did the children experience cognitive and social-emotional growth during the period of their enrollment? Did parents change in their feelings about themselves and their environments?

To answer these questions, mean scores were calculated for the pretest and posttest administrations of each major dependent variable; mean gain scores were then computed, and the significance level of each gain was determined by the use of a two-tailed t-test.[1] Appendix C contains tables showing the frequency distributions for the pretest scores, the posttest scores, and the gain scores on each dependent variable. Sample sizes in these tables differ from those given for the pretest scores in Chapters VI and VII; this is because the tables in Appendix C are based on only those children and parents for whom there are both pretest and posttest scores.

The following section discusses the results of comparisons between the pretest means and the posttest means.

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[1] For four of the dependent variables (Birch Work Response, Sociometric, Parent Attitudes toward Head Start, and Parent Involvement in Community), the frequency distributions, as shown in Appendix C, were skewed. However, in each case the pretest and posttest distributions were skewed in the same direction, so that the t-test was regarded as yielding useful results.

A. PRETEST-POSTTEST PERFORMANCE CHANGES

Table 82 summarizes all findings on the comparisons of pretest and posttest performance. The column at the far left lists the child and parent dependent variables. Other columns, from left to right, show the sample sizes; the means of the pretest scores (for persons with both pretest and posttest data); the means of the posttest scores; the mean gain scores; and the t-ratios of the gain scores. A double asterisk (**) after a t-ratio indicates that the gain (or loss) was significant at the .01 level.

1. Cognitive Measures

As Table 82 shows, the sample children showed significant gains (.01 level) on all cognitive measures. Stanford-Binet scores rose from 89.53 to 94.12, for a mean improvement of 4.59 IQ points. This was a fairly modest gain in comparison with the pretest standard deviation of 14.23, and still left the sample Head Start children, as a group, below the "norm" of 100. The finding is consistent, however, with typical results from earlier studies of Head Start and other preschool programs (see, for example, studies referenced in Chapter II). It appears that valuable cognitive growth occurs in the first year of Head Start, but that longer exposure to such programs (as in Follow Through) would be required before the negative effects of the children's prior deprivation could be fully overcome.

Similar results occurred on the Animal House subtest of the WPPSI, and on the Caldwell-Soule Preschool Inventory. Animal House scores increased on the average from 8.49 to 9.21, a statistically significant gain which nevertheless failed to bring the Head Start graduates to the national "norm" of 10.

Performance on the Caldwell-Soule and on each of its subscores also improved significantly. The overall Caldwell-Soule mean score increased from 109.87 to 120.28, for a 10.41 point gain. The larger magnitude of this gain, in comparison with the Stanford-Binet gain, suggests that the developers of the Caldwell-Soule were successful in creating a cognitive measure that would be sensitive to the effects of intervention programs such as Head Start.

Table 82

PRETEST-POSTTEST PERFORMANCE CHANGES

Dependent Variable	N	Pretest Mean	Posttest Mean	Mean Change	t
Stanford-Binet	1466	89.53	94.12	4.59	17.78**
Caldwell-Soule PSI	1232	109.87	120.28	10.41	27.15**
Pers.-Soc. Response	1233	10.70	12.94	2.24	26.93**
Assoc. Vocabulary	1231	5.30	7.31	2.01	27.74**
Concept Activ.-Numer.	1229	6.03	7.73	1.70	23.00**
Concept Activ.-Sensory	1228	11.60	14.77	3.17	34.03**
Animal House	1183	8.49	9.21	0.72	8.70**
Birch Work Response	1272	90.34	90.67	0.33	1.35
Birch Verbal Response	1272	56.41	61.23	4.82	15.29**
Birch Spont. Response	1272	111.60	111.68	0.08	0.74
Socio. Social Isolate Score	1275	94.12	93.84	-0.28	1.81
Parent Attit. toward Head Start	876	194.85	195.74	0.89	1.19
Parent Attit. toward Educ.	879	125.42	142.11	16.69	15.49**
Parent Feeling of Power	879	123.60	122.82	-0.78	0.74
Parent Involvement in Commun.	887	9.40	9.34	-0.06	0.64
Parent Feeling of Alien.	881	16.64	16.76	0.12	1.02

**Difference significant at .01 level

2. Social-Emotional Measures

Statistically significant gains (.01 level) were made by the sample children on one of the three Birch measures. As rated by the examiners, the proportion of Stanford-Binet test items to which the children gave verbal responses increased from 56.41 to 61.23, for a gain of 4.82. This indicates an increase in the children's verbal fluency, and/or in their willingness to converse with the examiners, during the evaluation period. There were no significant changes in the frequency with which children gave work response or spontaneous extension responses.

Stanford-Binet examiners also observed a significant (.01 level) improvement in the children's adaptiveness to the test conditions, as recorded in the Factors Affecting Test Performance instrument. At posttest time, the children showed less evidence of being distracted by the examiner, by noises or other environmental circumstances, and by the test itself, than they showed on the pretest.

No significant change was found in the proportion of social isolates, as defined by responses to the Sociometric instrument. That is, there was no statistical difference between pretest and posttest administration in the percentage of children who were chosen as playmates by one or more other children in the same class. This null finding may reflect, at least in part, the fact that the first administration ("pretest") was at mid-year rather than early in the year as with all other criterion measures. Thus the program's influence, if any, had only three or four months in which to act on the children.

3. Parent Attitudes

No significant change occurred in the parents' attitudes toward Head Start, but this is hardly surprising since the great majority of the parents were at or close to the top of the scale on initial administration of the Parent Interview (see Chapter VII). There were also no significant changes in the parents' reported feeling of personal power, in their degree of community involvement, or in their feeling of alienation, despite the fact that there was considerable room for improvement on all these measures.

The one parent measure on which a significant gain (.01 level) did occur was their attitude toward education. At the end of the evaluation period, by comparison with their responses at the start of the Head Start year, the parents on the average placed greater emphasis on the importance and value of education as a steppingstone to personal happiness and to financial success.

B. EFFECTS OF MISSING DATA

As noted in Chapter IV, the extensive amount of missing data on some variables could bias the results of this study, if the missing cases were drastically different than the children represented in the statistical analyses. It is possible to gain some insight concerning one potential source of bias, by comparing the pretest performance of all children having pretest scores (see Tables 26 through 36) vs. the pretest performance of only those children with both pretest and posttest scores (Table 82).

On the Stanford-Binet, the mean pretest IQ for the full pretest group (N=1741) was 89.04; the corresponding pretest mean for the pretest-posttest overlap group (N=1466) was slightly higher at 89.53. On the Caldwell-Soule, the pretest mean of the full pretest group (N=1459) was 109.41, and the pretest mean for the overlap group (N=1232) was 109.87. In the social-emotional domain, by contrast, there were virtually no differences in pretest scores for the full pretest group and the overlap group; on the Birch Verbal Response scale, for example, the pretest means for the two groups were 56.40 and 56.41, respectively.

The general trend is that, where differences occurred, the pretest means were slightly higher for the group that had both pretest and posttest data, than for the larger group consisting of all children with pretest data. It can be inferred that children who lacked postscores (and hence were not included in the gain-score calculations) had lower entry skills than those with both prescores and postscores.

The implications of these findings for the present analyses are subject to several interpretations. Since there was a tendency for children who started at a lower level of performance to make larger gains (see Chapter X), it might be assumed that, had all the starting children completed the posttests, there would have been larger gain-scores than those shown in Table 82. On the other hand, it might also be argued that the children who dropped out of the program before completing their posttests were more likely to be children who were not performing well as the year progressed. It was not possible in the present study to resolve this question of interpretation.

In summary, some bias in the analyses may have resulted from the missing data, and this should be allowed for in interpreting the results of the study. The exact extent and direction of the bias are not known, but there is no strong evidence that the general relationships found in the study between program variables and performance (see Chapters XI and XII) were drastically affected by the missing data.

C. SUMMARY

By the criterion of statistical significance, important improvements occurred during the evaluation period in all of the cognitive measures and in several measures of the children's motivational and social-affective growth. Some of these gains were quite small in absolute magnitude, however, and on measures that have national norms for the general population (i.e., Stanford-Binet and Animal House) the Head Start children were still below "average" at the end of the evaluation period. Nevertheless, it is clear that the sample children were experiencing appreciable growth in both the cognitive and the social-emotional domains, and on a few measures, such as the Caldwell-Soule cognitive instrument, the improvement was impressive. It is also worth noting that on *no* measure was there a significant *decrement* in performance.

The results with regard to the parents' attitudes, and their community involvement, seem less encouraging. Although there was improvement in the parents' attitude toward education, they retained their strong feelings of alienation from the rest of society, and of powerlessness to change their environment. The exact reason for this null finding may be difficult to determine. Perhaps there was nothing in their interactions with Head Start to make the parents feel more optimistic about their relationships with society, or about their own future success within that society. An alternative explanation might be that many members of disadvantaged groups have learned that certain attitudes and points of view are expected of them, and the Head Start parents may have responded to the Parent Interviews according to those preceived expectations.

All of the above findings must be interpreted with special caution, because of the lack of non-Head Start control groups. It is not possible to ascribe significant gains to the specific experiences of the Head Start programs themselves. One cannot say, for example, that scores on the Stanford-Binet would have increased less (or more) if the children had been in some other type of preschool program. An association has been demonstrated between Head Start participation and gains on a number of important performance measures, but no causal relationship has been proven.

Although the discussion in this chapter is focused primarily on the mean pre-post gains, it is important to note that there were sizeable variations in the magnitude of gains for different children, as shown in the frequency distributions of gains in Appendix C. One of those frequency distributions is reproduced here (Table 83), to illustrate this point. The average Stanford-Binet gain was 4.59 IQ points; as Table 83 shows, however, approximately *one child in eleven* (9.2%) *gained 18 points or better*. At the other end of the scale, by contrast, a similar proportion of children (9.5%) lost 12 points or more. There were similar patterns of variations on most other performance measures. Clearly,

Table 83

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON STANFORD-BINET

VALUES	FREQUENCY	PERCENTAGE
Above 47.9	2	0.1
43.0-47.9	2	0.1
38.0-42.9	3	0.2
33.0-37.9	1	0.1
28.0-32.9	7	0.5
23.0-27.9	33	2.3
18.0-22.9	86	5.9
13.0-17.9	157	10.7
8.0-12.9	237	16.2
3.0- 7.9	312	21.3
(-2.0)- 2.9	299	20.4
(-7.0)-(-2.1)	187	12.7
(-12.0)-(-7.1)	87	5.9
(-17.0)-(-12.1)	37	2.5
(-22.0)-(-17.1)	7	0.5
(-27.0)-(-22.1)	3	0.2
(-32.0)-(-27.1)	3	0.2
(-37.0)-(-32.1)	3	0.2

N = 1466

different children developed in different ways during their Head Start participation. The question is, whether those differences can be systematically associated with (1) characteristics of the children themselves, (2) features of the programs that they attended, and/or (3) interactions between the child and program characteristics. The following three chapters are addressed to this question.

CHAPTER X

DIFFERENCES IN GAINS FOR DIFFERENT TYPES OF CHILDREN

Chapter IX has shown that there were significant gains over the evaluation period in many of the children's cognitive and social-emotional performance measures. But how were these gains distributed over the different subgroups of children? Were they the same for boys and girls, for urban and rural children, etc.? Did certain groups make particularly large gains, only to be largely offset in the overall average figures by other groups that made smaller gains or even lost ground?

The data shown in Tables 84 through 89 provide a basis for answering the questions posed above. Each table provides a comparison of gains for two different groups of children. For example, Table 87 compares gains for Urban and Non-Urban children. From left to right, the columns show the dependent variables; the sample sizes, pretest means, posttest means, and mean gains on each dependent variable for one subgroup (i.e., Urban children); the sample sizes, pretest means, posttest means, and mean gains for the second subgroup (Non-Urban children); and the differences in mean gains for the two subgroups. A double asterisk (**) after the difference value means that the difference is significant at the .01 level; a single asterisk (*) designates a .05 level of significance.

A. CHILD'S AGE

Table 84 shows only three measures on which there were significant differences in gains for children below 60 months in age, and children 60 months or older. On one of the Caldwell-Soule subscores (Concept Activation-Numerical) and on the Birch Verbal Response score, the older children made larger gains. On the Factors Affecting Test Performance, the younger children gained more. In general, age does not appear to have been an important determiner of the children's progress in Head Start.

Table 84

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S AGE

DEPENDENT VARIABLE	YOUNG (BELOW 60 MOS.)				OLD (60 MOS. AND ABOVE)				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	683	93.31	97.91	4.60	783	86.24	90.83	4.58	-0.02
Caldwell-Soule PSI	584	108.36	118.88	10.52	648	111.23	121.54	10.31	-0.21
Pers.-Soc. Resp.	584	9.72	11.98	2.26	649	11.58	13.80	2.22	-0.04
Assoc. Vocabulary	583	4.52	6.78	2.16	648	6.01	7.89	1.88	-0.28
Concept Activ.-Numer.	580	5.22	6.52	1.30	649	6.75	8.81	2.04	0.74**
Concept Activ.-Sensory	579	10.20	13.48	3.28	649	12.86	15.93	3.07	-0.21
Animal House	540	8.91	9.67	0.76	643	8.14	8.82	0.68	-0.08
Birch Work Response	596	89.69	90.35	0.66	676	90.90	90.95	0.05	-0.61
Birch Verbal Response	596	54.16	58.10	3.94	676	58.41	64.00	5.59	1.65*
Birch Spont. Response	596	111.54	111.62	0.08	676	111.65	111.72	0.07	-0.01
Factors Affect. Test Perform.	689	58.38	66.16	7.77	814	60.36	66.45	6.08	-1.69**
Socio. Social Isolate Score	596	94.12	94.07	-0.05	679	94.12	93.63	-0.49	-0.54

**Difference significant at .01 level

*Difference significant at .05 level

[1] Sign of difference is positive when value for Old children is larger.

B. CHILD'S SEX

For all practical purposes, there were no differences in the performance gains of boys and girls, as shown in Table 85.

C. CHILD'S INITIAL (PRETEST) IQ

The children's pretest IQ's were significantly related to their gains on a number of cognitive and social-emotional measures, as shown in Table 86. On the Stanford-Binet, for example, the Low initial IQ group gained significantly more than the Mid IQ group, which in turn gained more than the High IQ group; all of these differences were significant at the .01 level. Furthermore, the absolute magnitude of the differences is impressive. The Low initial IQ children gained, on the average, almost nine IQ points more than the High IQ children; this is approximately twice the overall average pre-post gain for the total sample.

Similar, though less pronounced differences in gains were shown on the Caldwell-Soule. Again, the Low initial IQ group, which also had the lowest initial Caldwell-Soule scores, gained significantly more than the Mid IQ group, which in turn gained more than the High IQ group.

Roughly the same pattern appears on the three Birch scores and on the Factors Affecting Test Performance. On all three Birch scores, the Low initial IQ group gained significantly more than the High IQ group, and on two of the Birch scores (Verbal Response and Spontaneous Response) the Mid IQ group gained more than the High IQ group. On the Factors Affecting Test Performance, the Low initial IQ group gained more than either the Mid or the High group.

In general, then, it appears that children with lower initial ability benefited more from Head Start than those with higher initial ability. Furthermore, there is good evidence that this differential gain is not simply a regression-toward-the-mean phenomenon. As Table 86 shows, the Low initial IQ group also had the lowest initial scores on every other measure, except for the Sociometric Social Isolate Score; similarly, except for the Sociometric, the Mid IQ group also had the mid-level position on every other measure. This finding argues against one of the

Table 85

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S SEX

DEPENDENT VARIABLE	MALE				FEMALE				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	745	89.24	93.70	4.46	721	89.84	94.56	4.72	0.26
Caldwell-Soule PSI	624	108.69	119.61	10.92	608	111.08	120.97	9.89	-1.03
Pers.-Soc. Resp.	625	10.29	12.67	2.37	608	11.13	13.23	2.10	-0.27
Assoc. Vocabulary	624	5.40	7.34	1.94	607	5.20	7.30	2.09	0.15
Concept Activ.-Numer.	623	5.95	7.70	1.75	606	6.11	7.75	1.64	-0.11
Concept Activ.-Sensory	622	11.20	14.50	3.30	606	12.01	15.05	3.04	-0.26
Animal House	599	8.22	9.02	0.80	584	8.77	9.40	0.63	-0.17
Birch Work Response	639	90.72	90.52	-0.20	633	89.94	90.82	0.88	1.08*
Birch Verbal Response	639	56.56	60.97	4.41	633	56.27	61.50	5.23	0.82
Birch Spont. Response	639	111.61	111.56	-0.05	633	111.59	111.79	0.20	0.25
Factors Affect. Test Perform.	760	59.43	65.91	6.48	743	59.48	66.73	7.24	0.76
Socio. Social Isolate Score	640	94.07	94.30	-0.28	635	94.17	93.70	-0.29	-0.01

*Difference significant at .05 level

[1] Sign of difference is positive when value for Female children is larger.

Table 86

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S PRETEST IQ

	Low IQ (Below 85)				Mid IQ (85-95)				High IQ (Over 95)						
Dependent Variable	N	Pre Mean	Post Mean	Mean Gain	N	Pre Mean	Post Mean	Mean Gain	N	Pre Mean	Post Mean	Mean Gain	Diff. in Gain Low-Mid IQ	Diff. in Gain Low-High IQ	Diff. in Gain Mid-High IQ
Stanford-Binet	512	74.29	83.21	8.92	436	89.99	94.79	4.80	518	104.23	104.35	0.12	4.12**	8.80**	4.68**
Caldwell-Soule PSI	407	97.96	110.55	12.59	343	110.66	121.18	10.52	428	120.57	128.92	8.35	2.07*	4.24**	2.17*
Pers.-Soc. Resp.	407	9.24	11.96	2.72	343	10.86	13.06	2.20	428	12.00	13.82	1.83	0.52*	0.89**	0.37
Assoc. Vocabulary	405	4.20	6.24	2.04	343	5.23	7.47	2.24	428	6.44	8.26	1.82	-0.20	0.22	0.42*
Concept Activ.-Numer.	405	5.06	6.90	1.84	342	6.19	7.81	1.62	428	6.79	8.42	1.63	-0.22	0.21	-0.01
Concept Activ.-Sensory	403	10.05	13.90	3.85	342	11.80	14.90	3.10	429	12.87	15.45	2.58	0.75**	1.27**	0.52*
Animal House	396	7.21	7.85	0.64	332	8.52	9.50	0.98	404	9.68	10.28	0.60	-0.34	0.04	0.38
Birch Work Response	418	89.32	90.54	1.22	367	90.02	90.55	0.53	467	91.38	90.86	-0.52	0.69	1.74**	1.06
Birch Verbal Response	418	53.49	59.01	5.52	367	56.54	62.69	6.15	467	58.76	62.00	3.24	-0.63	2.28**	2.91**
Birch Spont. Response	418	111.13	111.44	0.31	367	111.52	111.88	0.36	467	111.98	111.65	-0.33	-0.05	0.64**	0.69**
Factors Affect. Test Perform.	528	56.45	64.43	7.98	439	60.46	66.51	6.05	521	62.02	68.31	6.29	1.93**	1.69**	-0.24
Socio. Social Isolate Score	420	94.75	94.52	-0.23	369	93.82	93.57	-0.25	434	93.79	93.53	-0.26	0.02	0.03	0.01

** Difference significant at .01 level

* Difference significant at .05 level

underlying premises of the regression-toward-the-mean explanation: namely, that a child's initial placement in the Low IQ group was likely to be an artifact of measurement error on the Stanford-Binet pretest. The strong agreement in initial performance on the different dependent variables seems to indicate considerable reliability in the placements. When this fact is paired with the finding that the Low initial IQ group made the largest gains on practically every performance measure, it seems fairly clear that regression effects alone cannot explain the differences in gains for the Low, Mid, and High IQ groups.

D. URBAN/NON-URBAN RESIDENCE

Table 87 shows significant differences in the gains of Urban and Non-Urban children on nine variables, including both cognitive and social-emotional measures. With one exception (Birch Spontaneous Response Score), all of the differences were in favor of the Non-Urban group. This finding may reflect the initial performance levels of the Non-Urban children at least as much as it relates to urbanicity *per se*, or to possible differences in the quality of Urban and Non-Urban programs. On seven of the nine dependent variables for which Urban and Non-Urban children had significant differences in gains, the group which had lowest initial scores made the largest gains. For these variables, the differences in gains suggest that Head Start was more beneficial to children of low ability.

E. SOUTH/NON-SOUTH RESIDENCE

The results on this variable were mixed, as shown in Table 88. Of the seven measures showing significant differences in gains, three favored the Southern children and four favored the Non-Southern children (though three of the latter differences reached only the .05 level of significance).

Two of the differences in gains are of particular interest because children with higher initial scores on those variables also made larger gains; this is an exception to the general rule noted earlier. The variables are the Concept Activation-Numerical Subscore of the Caldwell-Soule, and the Birch Verbal Response Score. In both cases, it was the Southern group that made the larger gains. One possible explanation is that Head Start centers in the South tended

Table 87

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	1176	90.92	94.79	3.87	290	83.93	91.41	7.48	3.61**
Caldwell-Soule PSI	970	110.84	120.24	9.39	262	106.27	120.45	14.18	4.79**
Pers.-Soc. Resp.	970	10.72	12.81	2.09	263	10.63	13.41	2.78	0.69**
Assoc. Vocabulary	968	5.40	7.32	1.93	263	4.96	7.29	2.33	0.40*
Concept Activ.-Numer.	965	6.08	7.61	1.53	264	5.84	8.16	2.31	0.78**
Concept Activ.-Sensory	965	11.67	14.51	2.84	263	11.36	15.73	4.38	1.54**
Animal House	933	8.72	9.38	0.65	250	7.62	8.58	0.95	0.30
Birch Work Response	970	89.92	90.50	0.58	302	91.65	91.21	-0.45	-1.03
Birch Verbal Response	970	55.76	59.46	3.70	302	58.55	66.94	8.40	4.70**
Birch Spont. Response	970	111.52	111.78	0.26	302	111.85	111.33	-0.52	-0.78**
Factors Affect. Test Perform.	1186	59.44	65.65	6.21	317	59.53	68.80	9.27	3.06**
Socio. Social Isolate Score	947	94.10	93.96	-0.14	328	94.16	93.47	-0.70	-0.56

**Difference significant at .01 level

*Difference significant at .05 level

[1] Sign of difference is positive when value for Non-Urban group is larger.

Table 88

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH SOUTH/NON-SOUTH RESIDENCE

DEPENDENT VARIABLE	SOUTH				NON-SOUTH				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	501	83.48	88.98	5.50	965	92.68	96.79	4.11	-1.39*
Caldwell-Soule PSI	414	110.96	121.60	10.64	818	109.32	119.61	10.29	-0.35
Pers.-Soc. Resp.	414	11.72	14.02	2.30	819	10.19	12.40	2.21	-0.09
Assoc. Vocabulary	413	6.10	7.83	1.73	818	4.90	7.06	2.16	0.43**
Concept Activ.-Numer.	414	7.08	9.15	2.07	815	5.50	7.00	1.50	-0.57**
Concept Activ.-Sensory	414	13.16	16.46	3.30	814	10.81	13.92	3.11	-0.19
Animal House	414	7.83	8.53	0.70	769	8.85	9.57	0.72	0.02
Birch Work Response	423	91.47	91.07	-0.40	847	89.75	90.45	0.70	1.10*
Birch Verbal Response	423	59.18	65.52	6.34	847	55.02	59.07	4.05	-1.29**
Birch Spont. Response	423	112.00	112.25	0.25	847	111.39	111.38	-0.01	-0.26
Factors Affect. Test Perform.	526	59.39	65.88	6.49	977	59.49	66.55	7.06	0.57
Socio. Social Isolate Score	425	94.25	93.49	-0.76	850	94.06	94.01	-0.05	0.71*

**Difference significant at .01 level

*Difference significant at .05 level

[1] Sign of difference is positive when value for Non-South children is larger.

to have more highly structured programs, and these programs may have been more beneficial to the development of numerical and verbal skills.

F. MOTHER'S EDUCATIONAL LEVEL

This variable was used to define subgroups of children who probably differed in socio-economic status, and possibly also in the quality of learning environment at home. However, the variable had very little relationship with the amount of performance gain by the sample Head Start children. The major exception, as Table 89 shows, was on the Animal House subtest of the WPPSI, where children whose mothers had a High level of education made larger gains than those whose mothers had less education.

It might have been expected that the children of the more highly educated mothers would have made higher gains on almost all of the performance measures, since those mothers presumably might have provided a richer learning environment at home to complement the Head Start experience. On the other hand, a regression toward the mean might have been expected to favor the children whose parents had less education, since those children had lower pretest scores on most of the dependent variables. It is conceivable that both of these trends were operating, and in effect cancelled each other out, though this premise cannot be proven from the available evidence.

G. SUMMARY

Several of the subgrouping variables, notably the children's initial Stanford-Binet IQ level, were significantly related to the amount of performance gain. However, the majority of these relationships appear to fall into a single pattern: namely, that children with the lowest initial scores on a measure tended to make the highest gain scores on that measure. On performance measures where there were consistent differences in gains, the larger gains were usually made by Non-Urban children, and by children who had low initial IQ scores. Personal variables (i.e., age, sex, and mother's education level) showed little association with magnitude of gains.

Table 89

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH
MOTHER'S EDUCATION LEVEL

	Low Educ.(Below 9th Grade)				Mid Educ.(9th to 11th Gr.)				High Educ.(Above 11th Gr.)						
Dependent Variable	N	Pre Mean	Post Mean	Mean Gain	N	Pre Mean	Post Mean	Mean Gain	N	Pre Mean	Post Mean	Mean Gain	Diff.in Gain Low-Mid Educ.	Diff.in Gain Low-High Educ.	Diff.in Gain Mid-High Educ.
Stanford-Binet	149	85.83	90.53	4.70	399	87.83	92.79	4.96	353	93.10	97.13	4.03	-0.26	0.67	0.93
Caldwell-Soule PSI	147	106.61	116.33	9.72	406	108.08	119.66	11.58	356	113.90	123.89	9.99	-1.86	-0.27	1.59
Pers.-Soc. Resp.	147	10.20	12.49	2.29	406	10.46	12.77	2.31	356	11.05	13.23	2.18	-0.02	0.11	0.13
Assoc. Vocabulary	146	5.07	6.99	1.92	406	5.00	7.25	2.25	355	5.66	7.72	2.06	-0.33	-0.14	0.19
Concept Activ.-Numer.	146	6.03	7.47	1.44	405	5.66	7.50	1.84	354	6.33	7.89	1.56	-0.40	-0.12	0.26
Concept Activ.-Sensory	146	11.03	14.19	3.16	405	11.17	14.51	3.34	353	12.02	15.00	2.98	-0.18	0.18	0.36
Animal House	142	8.20	8.65	0.46	390	8.43	8.95	0.52	334	8.87	10.04	1.17	-0.06	-0.71*	-0.65**
Birch Work Response	128	89.47	91.13	1.66	324	89.85	90.28	0.43	271	90.16	91.30	1.14	1.23	0.52	-0.61
Birch Verbal Response	128	55.21	58.09	2.87	324	53.98	58.74	4.75	271	56.35	60.42	4.07	-1.68	-1.20	0.68
Birch Spont. Response	128	110.87	111.06	0.19	324	110.63	110.97	0.34	271	111.84	112.03	0.19	-0.15	0.00	0.15
Factors Affect. Test Perform.	159	59.21	65.40	6.19	399	59.08	65.54	6.46	353	60.27	66.82	6.55	-0.27	-0.36	-0.09
Socio. Social Isolate Score	120	93.77	94.30	0.53	352	94.31	93.70	-0.61	303	93.72	93.38	-0.34	1.14*	0.87	-0.27

** Difference significant at .01 level

* Difference significant at .05 level

CHAPTER XI

DIFFERENCES IN GAINS ASSOCIATED WITH DIFFERENT PROGRAM APPROACHES

Were some program approaches associated with greater child and parent gains than other approaches? To answer this question, a series of one-way analyses of variance were performed; each set of analyses examined the relationship between a selected program variable (e.g., amount and condition of cognitively oriented materials in the classroom) and each of the selected dependent variables. The unit for these analyses was the individual child, rather than the class or site. The analysis-of-variance model used was one in which unequal cells were unweighted.

The program variables used in the analyses of variance were those described in Chapter V; that is, they included only the smaller subset of variables selected because they showed strong relationships with the dependent variables in the screening test (correlational analysis) or because they seemed of special theoretical or practical importance. These included the teacher's level of general education preparation; her length of paid experience with disadvantaged young (preschool) children; her quality of cognitive input (rated by observers); her use of physical control; extent to which the program was parent-centered; degree of program emphasis on the child's independence and self-care; emphasis on child socialization; emphasis on language programs; quantity and condition of cognitive materials; and quantity and condition of large-muscle equipment.

The dependent variables used in the analyses of variance differed from one program variable to another, as shown in Tables 90 through 99. In the analyses for a particular program variable, every dependent variable found in the correlational analyses to be strongly related was automatically included. Other dependent variables were included when it was felt that a null-finding (i.e., failure to find a significant relationship between the dependent variable and the program variable) might be surprising, and thus represent a finding of interest. An example is the inclusion of the Caldwell-Soule measure in the analyses for Cognitive Learning Materials (COGNMATL), even though the correlational analyses showed no relationship between those two variables. Other dependent variables were sometimes included so as to determine whether a given relationship would cut across several measures of the same generic type (e.g., the Stanford-Binet, the Caldwell-Soule, and the Animal House, which all represent cognitive measures).

Before the analyses of variance were performed, adjusted posttest scores were calculated for all the performance measures to be used in the analyses. In this procedure, the posttest scores were adjusted by regression techniques to correct for pretest differences among the children; the adjusted posttest scores were then used in place of simple gain scores as the dependent variables in the analyses of variance. One advantage of the adjusted posttest scores is that they reflect differential gains, yet at the same time they are interpretable in terms of actual scores on the particular instruments; that is, an adjusted posttest IQ score of 97 on the Stanford-Binet, for example, can be readily understood in the perspective of common knowledge about typical IQ scores and ranges.

The selected technique applied a straightforward, one-variable regression analysis in which the pretest score was used to "predict" the posttest score. The difference between the observed and predicted posttest scores was calculated, and this "residual" was the basic measure of performance used in the analyses. In order to make the values more easily understood, the pretest group mean was added to each residual. This transformation had no effect on the variance of these scores, since it was a constant for all children.

As thus far described, the posttest score adjustment procedure was not essentially different from that employed by many other investigators to partial out the effects of a covariate, in our case the pretest level of performance. While Bereiter (1963) and others have suggested that this method may suffer from attenuation effects due to unreliability in the pretest measure, it appears as satisfactory as any method reasonably available.

One departure from standard adjustment procedure requires discussion. Instead of estimating the regression line for this adjustment using all of the data available for each performance measure, the adjustment was based exclusively on the data from one of the "levels" (the lowest) on the program variable being studied. The reason for this procedure was that the use of all the data might have obscured the actual effect of the program variable, because of the fact that groups receiving more of the "treatment" would have been pooled (for adjustment purposes) with groups receiving less of the treatment. As is often the case, the decision involved a statistical trade-off. By using an adjustment procedure more sensitive to program effects, the possibility of "false positives" was also increased. This seems an acceptable risk, however, in a study which is somewhat exploratory in nature. Furthermore, in the later presentation of results of the analyses of variance, two levels of probability (.05 and .01) have been distinguished, so that the .01 level can be used by readers who prefer a more stringent interpretation of significance.

A. RESULTS OF ANALYSES OF VARIANCE

Tables 90 through 99 show the results of the analyses of variance for the different program variables. These were one-way analyses, with unequal cells unweighted. The columns in each table contain, from left to right, the names of dependent variables; the means and standard deviations on each dependent variable of the children in the lowest level of the program variable (e.g., children in classes whose teachers had a low educational level); the means and standard deviations for children in successively higher levels of the program variable; the total number of degrees of freedom in the analysis of variance; and the resulting F-ratio. F-ratios are marked with a double asterisk if they are significant at the .01 level, and a single asterisk if they reach the 0.5 level of significance.

Teacher's Use of Physical Control (PIT-126A). Is physical discipline an effective means of controlling Head Start children to promote their cognitive and social-emotional development? To what extent are the parents' attitudes associated with the teacher's mode of control? The "Type of Control" variable was used to define three groups: a High group consisting of children whose teachers indicated that they used no physical control at all; a Mid group whose teachers reported using "Dirty looks," "Scolding," or "Taking away privileges;" and a Low group whose teachers used "Mild physical" control. (No teachers reported using severe physical control.)

Table 90 shows significant relationships (.01 level) between mode of control and children's performance on the Stanford-Binet and on most of the Caldwell-Soule scores; scores were highest for children whose teachers reportedly used no physical control at all. On the Caldwell-Soule scores, the Mid group (dirty looks, scolding, and taking away privileges) was lower than the "No physical control" group, and also lower than the "Mild physical control" group.

Emphasis on Child Independence and Self-Care (IND-SELF). Although most teachers reported a low emphasis on fostering the children's independence and self-care (the median value was only 15 on a derived scale of 0 to 165), several classes had values in the upper half of this scale, and the correlational analysis indicated strong relationships between this variable and several performance measures. To examine these relationships more intensively, three groups were defined for the analysis of variance: a Low group with computed scale values below 5; a Mid group with values between 5 and 33; and a High group with values over 33.

The results, summarized in Table 91, indicate that reported program emphasis on independence and self-care was significantly related to a number of measures of children's cognitive and affective behavior, but the nature of the relationships is complex. In general, this type of program emphasis was associated with higher levels of cognitive performance (.01 level), as measured by the Binet and Caldwell-Soule tests. There was not a straight linear relationship with all of these measures, however. In the case of the Stanford-Binet IQ, for example, although the High group got the largest adjusted posttest score, the Mid group got a lower score than either the Low group or the High group. In the case of the numerical subscore of the Caldwell-Soule, by contrast, the Mid group obtained the highest scores.

Somewhat different results were found on two affective or adjustment variables. The High group was lowest on ratings of Birch Verbal Responses and was lower than the Mid group on the FATP measure of child's adjustment to test conditions. One possible interpretation of these findings is

Table 90

RESULTS OF ANALYSES OF VARIANCE ON
TEACHER'S USE OF PHYSICAL CONTROL (PIT-126A)

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	91.27	9.11	91.34	7.85	93.39	8.69	1162	7.66**
Caldwell-Soule PSI	117.25	11.08	117.10	14.55	120.69	10.73	979	10.28**
Pers.-Soc. Response	12.74	2.57	12.59	2.75	13.25	2.30	980	6.75**
Assoc. Vocabulary	7.24	2.16	7.21	2.43	7.57	2.09	978	2.82
Concept Activ.-Numer.	8.04	2.39	7.27	2.51	8.09	2.31	977	8.82**
Concept Activ.-Sensory	14.85	2.48	14.18	3.06	15.10	2.49	976	8.85**

M_1 = Mean for low level of PIT-126A
(i.e., physical control)

M_2 = Mean for mid level

M_3 = Mean for high level
(non-physical control)

**F significant at .01 level

Table 91

RESULTS OF ANALYSES OF VARIANCE ON EMPHASIS ON INDEPENDENCE AND SELF-CARE (IND-SELF)

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	94.60	8.78	93.91	8.78	95.63	8.74	1440	4.74**
Caldwell-Soule PSI	119.73	11.42	121.93	11.05	122.26	12.70	1213	5.58**
Pers.-Soc. Response	12.86	2.44	13.21	2.43	13.22	2.50	1214	2.84
Assoc. Vocabulary	7.01	2.10	7.50	2.07	7.55	2.37	1212	7.38**
Concept Activ.-Numer.	7.59	2.35	8.12	2.46	7.74	2.39	1210	5.32**
Concept Activ.-Sensory	14.61	2.80	15.03	2.63	15.08	2.60	1209	3.61*
Birch Work Response	90.32	6.70	90.39	6.88	90.55	6.67	1252	1.10
Birch Verbal Response	61.58	8.97	61.93	9.70	60.32	9.92	1252	3.32*
Birch Spont. Response	111.76	3.04	111.74	2.98	111.74	3.23	1252	0.01
Factors Affecting Test Perform.	65.27	8.33	66.99	7.10	66.28	7.44	1477	6.30**

M_1 = Mean for low emphasis on IND-SELF

M_2 = Mean for mid emphasis

M_3 = Mean for high emphasis

**F significant at .01 level

*F significant at .05 level

that "emphasis on independence and self-care" focuses attention on each child's independent performance, but does not stress verbal interactions with others (e.g., the Binet examiner).

Large-Muscle Equipment (MUSCLEQP). Although there would seem to be no logical connection between the amount and condition of large-muscle equipment in classrooms and the children's cognitive performance, such relationships were strongly suggested by the correlational analyses. To study these possible associations in greater depth, analyses of variance were performed with the data divided into two groups: a Low group consisting of children in classes with scaled values on MUSCLEQP below 13.0 (on a scale ranging from 0 to 20), and a High group for which the rating was 13.0 or above.

The results of the analyses generally confirm the findings of the correlational analyses, and indicate that children in classes with more and better large-muscle equipment gained more in cognitive abilities. Table 92 shows that higher classroom ratings on MUSCLEQP were associated with significantly higher performance on the Stanford-Binet, on the total Caldwell-Soule, and on two of the Caldwell-Soule subscores. No relationships were found with any affective measures.

Program Emphasis on Child Socialization (CHLDSOCL). The scale on this derived variable ranged from 0 to 225, and the median value was around 84. To study in greater detail the relationships found in the correlational analysis between CHLDSOCL and several dependent variables, an analysis of variance was performed with the children divided into three groups: a Low group, whose classes placed little emphasis on child socialization activities (scale value below 60); a Mid group (value between 60 and 111); and a High group (above 111) whose classes placed heavy emphasis on socialization.

As shown in Table 93, "socialization" was related to the Caldwell-Soule (.05 level), but not to the Stanford-Binet or Animal House. On the total Caldwell-Soule and on two of its subscores (Associative Vocabulary and Sensory), a Middle level of emphasis on child socialization was superior to either a High level or a Low level. The strongest relationship, however, was in the

Table 92

RESULTS OF ANALYSES OF VARIANCE ON

LARGE-MUSCLE EQUIPMENT (MUSCLEQP)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	94.44	8.73	95.84	9.15	1151	7.01**
Caldwell-Soule PSI	119.49	11.40	121.33	11.10	978	6.56**
Pers.-Soc. Resp.	12.65	2.37	12.99	2.42	979	4.83*
Assoc. Vocabulary	7.12	2.16	7.55	2.23	977	9.35**
Concept Activ.-Numer.	7.75	2.31	7.40	2.28	974	5.69*
Concept Activ.-Sensory	14.84	2.70	15.02	2.75	973	1.08
Birch Work Response	90.47	6.60	91.13	6.52	1018	2.56
Birch Verbal Response	62.78	9.50	62.36	9.12	1018	0.52
Birch Spont. Response	111.62	3.10	111.35	3.08	1018	1.83
Factors Affecting Test Perform.	66.44	7.94	67.24	7.22	1186	3.28

M_1 = Mean for low level on MUSCLEQP

M_2 = Mean for high level

**F significant at .01 level

* F significant at .05 level

Table 93

RESULTS OF ANALYSES OF VARIANCE ON

EMPHASIS ON CHILD SOCIALIZATION (CHLDSOCL)

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	94.54	8.72	94.80	9.32	95.07	8.37	1440	0.44
Caldwell-Soule PSI	121.24	13.18	123.29	11.45	121.89	10.62	1213	3.06*
Pers.-Soc. Response	13.05	2.63	13.20	2.44	13.25	2.34	1214	0.73
Assoc. Vocabulary	7.27	2.27	7.64	2.21	7.30	2.07	1212	3.49*
Concept Activ.-Numer.	7.56	2.58	7.98	2.39	7.81	2.29	1210	2.95
Concept Activ.-Sensory	14.66	2.82	15.16	2.60	14.85	2.61	1209	3.52*
Animal House	9.31	2.47	9.37	2.48	9.45	2.46	1165	0.32
Birch Work Response	90.18	6.93	90.63	6.29	90.41	6.72	1252	0.47
Birch Verbal Response	60.37	10.22	60.91	9.00	61.98	9.19	1252	3.19*
Birch Spont. Response	112.03	2.91	111.64	3.11	112.13	3.19	1252	2.98
Factors Affecting Test Perform.	65.86	7.51	66.06	8.45	67.23	7.05	1477	4.81**

M_1 = Mean for low emphasis on CHLDSOCL

M_2 = Mean for mid emphasis

M_3 = Mean for high emphasis

**F significant at .01 level

*F significant at .05 level

affective/social domain. The greater the emphasis on socialization, the better the child's adjustment to the (Stanford-Binet) test conditions (.01 level of significance). Children in the High socialization group also gave more Birch Verbal Responses (.05 level). This finding suggests that socialization activities, which included encouragement of verbal interactions among children, and between children and adults, had a positive impact on the children's verbal fluency and on their ability to adapt to new interactive situations such as those in the administration of the Stanford-Binet test.

Level of Teacher's General Education Preparation (TGEDPREP). Do children with highly educated teachers learn more, and are their parents' attitudes toward themselves and their surroundings more favorable, than when the teachers are less well educated? To test this, the data were organized to divide the sample into two groups: a Low group consisting of children having teachers with less than a B.S. or B.A. degree, and a High group with teachers having the bachelor's degree or higher.

Table 94 shows that the level of teacher's general education was not significantly related to adjusted posttest Binet IQ, but it had a significant (.01 level) negative relationship with adjusted posttest Caldwell-Soule total scores and with three of the Caldwell-Soule subscores. Similar results were found on adjusted posttest scores in the children's ability to adapt to test conditions (FATP), and in their observed work-type responses and verbal responses to the Binet items. In all these cases, adjusted postscores were lower for children having teachers with a higher education level. No parent measures were included in the dependent variables for this analysis, because the correlational analysis had indicated that there were probably no strong relationships with teacher education.

These findings must be viewed with caution because of the possible confounding of the TGEDPREP variable with geographic region. Most of the less-educated teachers were in Head Start classes in the South; the South also had, in general, the more highly structured programs. There is good evidence from earlier studies (see Chapter II), that structured programs usually produce

Table 94

RESULTS OF ANALYSES OF VARIANCE ON

LEVEL OF TEACHER'S GENERAL EDUCATION PREPARATION (TGEDPREP)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	91.28	9.03	91.64	8.58	1161	0.45
Caldwell-Soule PSI	120.93	10.95	118.36	10.78	974	12.77**
Pers.-Soc. Resp.	13.45	2.46	12.85	2.27	975	15.09**
Assoc. Vocabulary	7.43	2.10	7.16	2.13	974	3.76
Concept Activ.-Numer.	8.03	2.23	7.55	2.38	975	9.97**
Concept Activ.-Sensory	15.75	2.46	14.49	2.55	974	56.60**
Birch Work Response	91.70	6.39	90.63	6.64	1021	6.10*
Birch Verbal Response	65.91	9.45	60.54	8.98	1021	78.68**
Birch Spont. Response	111.89	2.98	111.78	3.12	1021	0.28
Factors Affecting Test Perform.	68.01	6.21	66.08	8.14	1196	19.10**

M_1 = Mean for low level of TGEDPREP

M_2 = Mean for high level

**F significant at .01 level

*F significant at .05 level

better performance, at least on cognitive measures; thus the higher gains found in the present study for children in the Low group on TGEDPREP might simply reflect the greater structure of the programs for those children. This possibility is further explored in Chapter XII, in which the TGEDPREP variable is separately analyzed for children in Southern and non-Southern classes.

Teacher's Paid Experience with Disadvantaged Young (PDEXDSYG). Another question of direct operational relevance to Head Start concerns the relationship between the teachers' prior teaching experience and the gains of the children and their parents. The split on PDEXDSYG divides the sample children into a None group, whose teachers had no paid experience with disadvantaged preschoolers prior to the evaluation period, and a Some group, whose teachers had prior experience.

As shown in Table 95, children having teachers with "prior paid experience" obtained lower adjusted postscores (.01 level) on the Caldwell-Soule (total, Personal-Social Responsiveness Subscore, and Sensory Subscore) than those having teachers without such prior experience. There was no relationship with any child affective measure, but parents of children having teachers with prior paid experience showed less positive feelings of personal power (.01 level).

As with the TGEDPREP variable, the findings on Teacher's Paid Experience with Disadvantaged Young are subject to suspicion, because of probable confounding of the variable with geographic region. The less-experienced teachers, to a large extent, were in the South, which also had the more highly structured programs. In Chapter XII, therefore, the relationships between PDEXDSYG and the dependent variables are separately analyzed for children in Southern and Non-Southern Head Start classes.

Emphasis on Language Program (LANG-PRG). This variable was of interest both because prior research (see Chapter II) has indicated that a language emphasis may promote cognitive development, and because of significant relationships found in the correlational analysis between LANG-PRG and several performance measures. The distribution of data on LANG-PRG was bimodal, with over half the children in classes having values in the lowest interval on the scale

Table 95

RESULTS OF ANALYSES OF VARIANCE ON
TEACHER'S PAID EXPERIENCE WITH DISADVANTAGED YOUNG (PDEXDSYG)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	94.12	8.53	93.61	9.20	1161	0.74
Caldwell-Soule PSI	120.30	10.62	117.74	11.43	974	10.23**
Pers.-Soc. Resp.	13.02	2.34	12.48	2.39	975	9.86**
Assoc. Vocabulary	7.29	2.06	7.23	2.28	974	0.14
Concept Activ.-Numer.	7.75	2.27	7.42	2.49	975	3.59
Concept Activ.-Sensory	14.95	2.56	14.22	2.52	974	14.85**
Factors Affecting Test Perform.	67.07	7.54	66.11	7.29	1196	3.67
Parent Feeling of Power	124.39	26.21	116.42	24.37	687	11.40**
Parent Feeling of Alien.	16.97	3.35	16.42	3.09	689	3.37

M_1 = Mean for low level of PDEXDSYG

**F significant at .01 level

M_2 = Mean for high level

(1-20, in a scale ranging from 0 to 300), and the remaining children spread from 60 to 240, with a secondary mode in the range from 161 to 180. For the analysis of variance, the children were divided into a Low group with scores on LANG-PRG of 11 or less, and a High group with scores of 60 or higher. There were no cases between 11 and 60.

Table 96 shows conflicting results on the cognitive measures, with greater language emphasis positively associated with three of the Caldwell-Soule subscores (.01 level), but negatively related to Binet IQ (.01 level). Somewhat surprising is the lack of evidence that greater language emphasis was positively related to any of the performance measures that might logically be associated most closely with language skills. Level of emphasis on language program was negatively related to the Binet, which has a large verbal component, and failed to show any relationship to either the Associative Vocabulary Subscore of the Caldwell-Soule or the Birch Verbal Response Score. At the same time, however, a high degree of emphasis on language did increase Birch Spontaneous Scores, which might be interpreted as indicative of a form of verbal fluency.

Teacher's Quality of Cognitive Input (POT-COGN). The split on this variable divided children's classes into three groups: Low (scale value under 9.6); Middle (9.6-14.8); and High (above 14.8). These values fall on a derived scale of 0 to 30, with the Middle range corresponding to "occasional" observations by the independent observers of several kinds of teacher behaviors regarded as representing desirable cognitive inputs to the children.

It was expected that teachers rated as having high quality of cognitive input would promote greater cognitive growth in the children and would also increase the children's achievement motivation. The results summarized in Table 97 generally fail to confirm these hypotheses. Children of teachers rated as having High cognitive input did not show significantly superior performance on the Binet or Caldwell-Soule tests. In addition, teacher's level

Table 96

RESULTS OF ANALYSES OF VARIANCE ON

EMPHASIS ON LANGUAGE PROGRAMS (LANG-PRG)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.83	9.25	94.28	8.26	1235	9.64**
Caldwell-Soule PSI	119.43	11.10	119.71	12.25	1028	0.14
Pers.-Soc. Response	12.51	2.38	12.92	2.45	1029	7.42**
Assoc. Vocabulary	7.24	2.19	7.04	2.18	1027	2.23
Concept Activ.-Numer.	7.21	2.39	7.73	2.33	1026	12.76**
Concept Activ.-Sensory	13.94	2.63	14.80	2.60	1025	28.06**
Birch Work Response	91.08	6.51	90.25	6.83	1090	4.24*
Birch Verbal Response	60.82	8.72	61.87	10.63	1090	3.15
Birch Spont. Response	111.20	3.06	111.93	3.28	1090	14.19**
Factors Affecting Test Perform.	66.92	6.74	66.54	8.18	1269	0.85
Parent Feeling of Power	121.80	27.34	123.90	24.60	738	1.20

M_1 = Mean for low emphasis on LANG-PRG

M_2 = Mean for high emphasis

**F significant at .01 level

*F significant at .05 level

Table 97

RESULTS OF ANALYSES OF VARIANCE ON

TEACHER'S QUALITY OF COGNITIVE INPUT (POT-COGN)

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	95.37	8.37	95.80	9.12	94.98	8.95	1446	1.10
Caldwell-Soule PSI	118.39	11.67	120.18	11.27	120.08	12.35	1214	2.86
Factors Affecting Test Perform.	66.64	6.97	66.27	7.61	66.24	8.26	1483	0.40
Parent Feeling of Alien.	16.34	3.26	16.41	3.20	17.16	3.27	872	5.85**

M_1 = Mean for low level of POT-COGN

M_2 = Mean for mid level

M_3 = Mean for high level

**F significant at .01 level

of cognitive input was associated with less desirable values (.01 level) on the parents' feeling of alienation; that is, parents of children in the High group on "teacher's level of cognitive input" reported a significantly greater feeling of alienation from society.

Cognitive Learning Materials (COGNMATL). Values on the derived scale of COGNMATL (possible range of 0 to 38) were divided into three groups: a Low group in which the scaled values representing quantity and condition of cognitive materials were under 15; a Mid group with values between 15 and 22; and a High group with values of 23 and above.

As Table 98 shows, there was a clear and systematic relationship between COGNMATL and Birch Work Response Scores. In classes with better access to cognitively oriented materials and aids, the children gave a significantly larger (.01 level) percentage of work-type responses; this finding suggests that these children had a stronger task orientation. Furthermore, children in classes with higher values on COGNMATL also performed better on the Stanford-Binet (.05 level of significance). A conflicting finding, however, is the decrease in Animal House scores with higher COGNMATL values.

Parent-Centered Program (PARNTCNT). Because of the strong emphasis in the Head Start national guidelines on active parent participation, it was felt of interest to examine the relationships between the local programs' degree of emphasis on parent involvement (as reported by the teachers) and the associated levels of child performance and parent attitudes. The split on the PARNTCNT variable formed two groups: a High group consisting of children whose teachers reported any emphasis on parent involvement; and a Low group whose teachers reported no emphasis at all on parent involvement or participation.

A detailed discussion of results on PARNTCNT is neither useful nor necessary, as there was only one significant difference, that at the .05 level. As Table 99 shows, there was no evidence that efforts to involve parents were positively (or negatively) associated with parent attitudes or participation in community activities.

Table 98

RESULTS OF ANALYSES OF VARIANCE ON

COGNITIVE LEARNING MATERIALS (COGNMATL)

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	94.63	8.89	95.60	8.59	96.49	9.23	1159	4.20*
Caldwell-Soule PSI	119.80	11.25	121.23	11.01	120.34	11.62	985	1.31
Pers.-Soc. Response	12.57	2.36	12.98	2.41	12.86	2.43	986	2.52
Assoc. Vocabulary	7.10	2.11	7.12	2.15	7.21	2.32	984	0.25
Concept Activ.-Numer.	7.31	2.67	7.56	2.10	7.41	2.50	981	0.86
Concept Activ.-Sensory	14.18	2.77	15.15	2.68	14.57	2.66	980	10.45**
Animal House	9.74	2.39	9.43	2.58	9.16	2.44	941	4.46*
Birch Work Response	89.39	7.46	90.33	6.26	91.22	6.03	1026	6.48**
Birch Verbal Response	61.01	9.24	63.35	10.22	61.09	8.27	1026	7.15**
Birch Spont. Response	112.14	3.10	112.04	3.08	112.07	3.08	1026	0.09
Parent Attitude Toward Head Start	194.36	21.24	196.77	13.56	196.01	15.26	697	1.13

M_1 = Mean for low level on COGNMATL

M_2 = Mean for mid level

M_3 = Mean for high level

**F significant at .01 level

*F significant at .05 level

Table 99

RESULTS OF ANALYSES OF VARIANCE ON PARENT-CENTERED PROGRAM (PARNTCNT)

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	92.93	9.54	92.60	8.30	1250	0.42
Animal House	9.12	2.32	9.02	2.54	1012	0.36
Birch Spont. Response	111.95	3.37	111.76	3.02	1102	1.01
Factors Affecting Test Perform.	67.09	6.97	66.03	7.91	1282	6.12*
Parent Attit. Toward Head Start	195.54	16.83	196.24	15.64	753	0.34
Parent Attit. Toward Education	143.82	26.42	144.56	28.07	756	0.13
Parent Feeling of Power	123.25	26.67	121.93	25.47	756	0.46
Parent Involve. in Community	9.33	2.44	9.32	2.44	764	0.00
Parent Feeling of Alien.	16.87	3.07	16.78	3.35	758	0.13

M_1 = Mean for low value of PARNTCNT (i.e., not parent-centered)

M_2 = Mean for high value (parent-centered)

*F significant at .05 level

One probable reason for the lack of stronger relationships between parent-involvement efforts and the dependent variables is that, as noted in Chapter VIII, values on PARNTCNT were entirely at the low end of the scale, with the highest value for any class being 14 on a scale from 0 to 35. Furthermore, when parents did participate it was usually as spectators or learners rather than as advisors or policy makers. This type of role might understandably have had only limited influence on the programs, the children, or the attitudes of the parents themselves.

B. SUMMARY

In general, the question of whether Head Start children and their parents gained more with some program approaches than with other approaches was answered in the affirmative. Several variables related to the teachers' observed or self-reported conduct of the classroom activities were significantly associated with child and parent measures. Cognitive gains, as measured by the Stanford-Binet and the Caldwell-Soule PSI, were enhanced by (or at least associated with) a strong program emphasis on the children's Independence and Self-Care; that is, adjusted posttest scores on those measures were highest in classes where the teachers stressed the children's ability to put on their own clothes, tidy up their own desks, go to the toilet alone, etc. At the same time, the IND-SELF variable was negatively related, overall, to gains on the Birch Verbal Response, indicating that an emphasis on self-reliance may have been less successful in fostering verbal (oral) fluency, as measured by the children's ability or willingness to respond verbally to Stanford-Binet items.

Almost the reverse relationships are shown on the Child Socialization (CHLDSOCL) variable. The degree of program emphasis on child socialization activities (e.g., "Work and play cooperatively," "Participate in small groups," "Enjoy other children") was not related in any consistent way to cognitive performance, but showed a positive relationship with the children's Birch Verbal Response scores and with their adaptiveness to the Stanford-Binet test conditions (FATP); that is, children in classes where more attention was paid to socialization gave more verbal responses to the Stanford-Binet and showed better adaptiveness to the test conditions. It is undoubtedly an over-simplification to say that an emphasis on self-reliance produced better ability to solve intellectual problems, and that an emphasis on socialization led to better (or at least more fluent) interactions between children and test administrators, but the data are at least suggestive of such relationships.

Another program/teacher variable that was significantly related to cognitive performance was the teachers' mode of control; better gains on both the Stanford-Binet and the Caldwell-Soule were made by children in classes whose teachers reported no use of physical punishment of the children. This finding is consistent with reinforcement theory, which says that negative reinforcement, especially of a harsh nature, can inhibit learning.

One of the surprising findings was that for the MUSCLEQP variable; better quantity and condition of large-muscle equipment were associated with higher gains on both the Stanford-Binet and the Caldwell-Soule. One possible explanation is that the MUSCLEQP variable reflects the overall affluence of the different centers and classes. According to this rationale, a center with better large-muscle equipment is also one with generally better facilities and equipment. One piece of evidence against this explanation is that another variable (FACILITY), which was a general composite score summarizing ratings of many different types of equipment and facilities, showed no such strong relationships with dependent variables in the correlational analyses. Thus it would appear that MUSCLEQP is not just an indicator of the general quality of the centers.

Two variables that pertained to the teachers' education (TGEDPREP) and experience (PDEXDSYG) were related to several cognitive and affective measures, but in a surprising direction. Higher levels of education and teaching experience with disadvantaged young children were associated with lower gains on the Caldwell-Soule cognitive measures and with several social-affective measures. In addition, higher levels of paid teaching experience were associated with lower parent feelings of power. However, all of these findings were potentially subject to contamination by the confounding of TGEDPREP and PDEXDSYG with geographic region; for this reason, any attempt to explain the relationships is deferred to Chapter XII, which analyzes these interactions separately for Southern and Non-Southern classes.

Few strong or consistent relationships were shown by the remaining program variables used in the analyses of variance. Some of these variables are considered in greater detail and show more interesting findings in Chapter XII, which examines the differential effects of the program variables for different subgroups of children.

CHAPTER XII

RELATIONSHIPS BETWEEN PROGRAM APPROACHES AND PERFORMANCE FOR DIFFERENT SUBGROUPS OF CHILDREN

The analyses reported in Chapter X showed that certain subgrouping variables (i.e., initial IQ and urban/non-urban residency) were related to differences in performance gains. Chapter XI showed that some differences in gains were associated with differences in program approaches. The question next to be considered is: Did the program variables have different relationships with the performance measures for different subgroups of children? In other words, were particular program approaches consistently associated with higher performance for all subgroups, or did such associations hold only for certain subgroups? Were some program approaches positively associated with performance gains for one subgroup, and negatively associated for another subgroup?

The major method selected for studying the relationships between program variables, child subgrouping variables, and performance, was to perform one-way analyses of variance for different subsets of children; this method provided independent measures of the association between program variables and performance for children of different age levels, different pretest IQ's, etc.

The following section of this chapter discusses the variables used to define different subsets of the children; specifies the cutting points on each of the subsetting variables; and indicates reasons for the selection of the variables. Following this discussion, the results of the new analyses of variance are presented for the different subgroups, and the findings are then summarized.

A. SUBSETTING VARIABLES

Four variables, child's age, initial IQ, urban/non-urban residency, and level of attendance, were used to define subsets of Head Start children, so that separate analyses of variance could be performed to determine the differential associations between program variables and performance measures for different groups. In addition, for two of the program variables, Teacher's General

Education Preparation (TGEDPREP) and Teacher's Paid Experience with Disadvantaged Young (PDEXDSYG), t-test comparisons of performance differences associated with program differences were computed separately for Southern and for Non-Southern children; this was done to eliminate any possible confounding of the TGEDPREP and PDEXDSYG variables with Southern vs. Non-Southern regional differences.

Three of the subsetting variables (child's age, initial IQ, and urban/non-urban residency) are discussed in detail below. The fourth subsetter, level of attendance, was used because, as noted in Chapter IV, there were variations among and within E&R Centers with respect to the timing of the pretests and posttests, and the intervals between those tests. It was felt that at least a partial control for these variations could be gained by performing separate analyses of variance for Low Attendance (under 133 days) and High Attendance (133 days or more) children. These attendance figures represent the numbers of days the children actually attended classes during the evaluation period, as recorded by the teachers and coded on the Master Data Card for each child.

Although attendance level had a strong effect on the interactions between program approach and performance, the detailed results need not be separately described for each program variable, since the variations with attendance level were much the same across all of the program variables. In general, where there was a significant relationship between a program variable and performance for the total sample, that relationship was also found in the High Attendance group, indicating that apparent program "effects" were not artifacts of confounding with attendance level. Many of the relationships between program approach and performance were smaller, or even disappeared entirely, for the Low Attendance group. This probably reflects the smaller period of time during which the program variables had an opportunity to influence performance.

1. Child's Initial IQ

Information about children's initial intelligence can be readily obtained in the Head Start Centers, and could be used as a practical basis for selecting different programs for children of different initial IQ levels if the evidence supports the value of such a policy. Decisions could be made at the center level, at the class level, or conceivably even for groups within classes. Furthermore, IQ level was found (Chapter X) to be highly related to overall performance gains. For subsetting purposes, initial (pre) IQ was divided into three groups: one group with IQ's under 85; a second group with IQ's between 85 and 95; and a third group with IQ's of 95 or over. These groupings were chosen on the basis of the actual distribution of scores for this sample.

2. Child's Age

Information about age is readily available to the Head Start Centers, and this variable seems an eminently practical one to use for making decisions about different program treatments. Even though age was not strongly related to overall gain, as shown in Chapter X, it was felt that it might interact with program approach, e.g., that an effective approach for older children might be much less successful with younger children.

The age (expressed in months) was the average of the child's age at the posttest administration of six different instruments. Children were divided into two age groups: children under five years (60 months); and children five years old or more.

3. Urban vs. Non-Urban Residency

This variable showed (Chapter X) a number of significant associations with overall gain scores. In addition, it could provide a fairly simple basis for Center-level decisions about the most effective program approaches for different sites.

The variable is derived from the Master Data Card. For subsetting purposes there are two groups: Urban (children in cities of 50,000 population or larger), and Non-Urban (children in smaller towns, suburbs, or rural areas).

B. RESULTS OF ANALYSES FOR DIFFERENT SUBGROUPS

Before describing the detailed findings on the analyses of variance for different subgroups, one point needs to be made about the interpretation of the results. The analyses were designed with the point of view that the study was to a large extent exploratory, or hypothesis-generating, rather than totally definitive. Such a viewpoint seemed consistent with the fact that there were many uncontrolled sources of variance whose actual effects were largely unknown; that there were no no-treatment control groups; and that on some variables there were fairly extensive missing data (as shown in Chapters VI through VIII by the variations in sample sizes for different variables). For these reasons, greater emphasis was placed in the analyses on obtaining useful clues about program features that might be manipulated in the future with some reasonable probability that they will have desirable impact on program effectiveness, than with applying the most stringent tests of significance. In other words, procedures were deliberately selected that were likely to produce a certain number of false leads, rather than to overlook promising ones. One of these intentional choices, discussed above, was the use of data from a single subset of children rather than from the entire evaluation sample to adjust the posttest performance scores. This choice most likely has the effect of increasing the number of ANOVA's on which the calculated F-ratios will reach any selected probability level.

The second factor contributing to the likelihood of producing false positives is the absence of any mathematical correction for the fact that large numbers of analyses were performed, involving large numbers of comparisons among treatment conditions. Statistical tests were applied of the sort conventionally used where hypotheses have been identified in advance of selecting samples or collecting data, and where only a small number of comparisons are made (i.e., in traditional control-group comparison experiments). These conditions do not hold in the present quasi-experimental study, where the large number of comparisons means that a certain number of those comparisons will reach a given level of probability by chance alone.

Rather than attempt to correct for these sources of false positives by any mathematical formulas, the choice was made simply to present the uncorrected findings but to distinguish sources of variance (i.e., program effects) that reach two different levels of probability: the .05 level and the .01 level. Use of the more stringent .01-level criterion for rejection of the null hypothesis will eliminate many of the relationships that may have been spurious artifacts of uncontrolled variables, pure chance relationships among the many comparisons, etc. On the other hand, data are also presented on findings at the .05 level, since there may be clues here about program effects that should be further studied in future Head Start programs. In the following verbal summaries of the results of the ANOVA's, relationships at both the .05 level and .01 level are discussed, but greater emphasis is placed on those reaching the .01 level.

Tables 100 through 126 present the results of the analyses of variance for the different subgroups of children. In each table, the subgrouping variable (e.g., Child's Age) is identified across the top of the table, with the two (or three) values of that variable designated immediately below. The left-hand column of the table lists the dependent variables included in the analyses; these are identical in every case to the variables studied in the analyses of variance for the total (non-subset) samples. Because of the large quantities of data involved (over 1000 separate analyses of variance were performed), the tables are simplified by including the actual cell values only for those analyses that yielded significant F-ratios. Cell entries in the first column following the list of dependent variables are the mean adjusted posttest scores for the lowest level of the program variable; then follow the mean scores for the remaining levels of the program variable. In the next column, the total degrees of freedom are indicated, followed by the F-ratios. A double asterisk after an F value means that the relationship between program variable and dependent variable was significant at the .01 level; a single asterisk indicates a .05 level of significance.

1. Teacher's Use of Physical Control (PIT-126A)

a. Variation with Child's Pretest IQ (Table 100)

The most consistent relationship between "type of control" and performance was in the High IQ children. These relationships followed essentially the pattern described for the total sample; that is, the highest scores on the Stanford-Binet and Caldwell-Soule were made by children in classes whose teachers reported no use of physical control. Similar but less pervasive relationships were found in the Low and Mid IQ groups.

b. Variations with Child's Age (Table 100)

"Type of control" had a stronger and more pervasive relationship with performance for children under five years old than for children five years or older. With one exception (Stanford-Binet scores for Young children) the results followed the general pattern of higher cognitive performance in classes whose teachers reported no use of physical control.

c. Variations with Urbanicity (Table 101)

Almost the total relationship between "type of control" and performance was in the Urban groups. For this group, children whose teachers used "No physical control" were consistently superior.

2. Emphasis on Child's Independence and Self-Care (IND-SELF)

a. Variations with Child's Initial IQ Level (Table 102)

Most of the significant relationships between IND-SELF and performance were in the High (over 95) IQ group. In this High group, the overall positive relationship with cognitive performance was most clearcut. The negative relationship with Birch Verbal Responses was also evident in the High IQ group, and, as with the total sample, the Middle level of program emphasis on children's independence and self-care had the highest FATP score.

Table 100

ANALYSIS OF VARIANCE ON TEACHER'S USE OF PHYSICAL CONTROL (PIT-126A):
SUBSET BY CHILD'S AGE AND PRETEST IQ

DEPENDENT VARIABLE	CHILD'S AGE									
	YOUNG					OLD				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet	99.97	92.04	94.39	507	3.59*	90.30	90.34	92.61	654	5.09**
Caldwell-Soule PSI	114.12	115.55	120.93	450	10.77**					
Pers.-Soc. Resp.	11.84	12.07	13.01	450	7.83**					
Assoc. Vocabulary	6.28	6.75	7.55	449	8.79**					
Concept Activ.-Numer.	6.83	6.72	7.40	447	3.97*					
Concept Activ.-Sensory						15.29	14.55	15.58	529	5.75**

DEPENDENT VARIABLE	LOW IQ					MID IQ					HIGH IQ				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet						90.00	91.08	94.05	359	8.41**	93.04	90.25	93.40	394	3.78*
Caldwell-Soule PSI	117.75	111.23	118.23	322	5.65**	115.77	120.26	120.08	286	4.01*	118.30	118.93	123.86	324	9.22**
Pers.-Soc. Resp.	12.90	11.89	13.15	322	4.30*						12.61	12.81	13.55	324	4.91**
Assoc. Vocabulary											7.37	7.28	8.19	324	6.95**
Concept Activ.-Numer.	8.11	6.81	7.94	321	4.76**						8.38	7.41	8.43	324	5.29**
Concept Activ.-Sensory	15.33	13.26	15.10	319	8.43**						14.44	14.28	15.23	325	5.22**

M_1 = Mean for low values on PIT-126A (i.e., physical control)

M_2 = Mean for mid level on PIT-126A

M_3 = Mean for high level on PIT-126A (non-physical control)

** F significant at .01 level

* F significant at .05 level

Table 101

ANALYSIS OF VARIANCE ON TEACHER'S USE OF PHYSICAL CONTROL (PIT-126A): SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN VS. NON-URBAN									
	URBAN					NON-URBAN				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet	90.77	91.14	93.30	915	8.01**					
Caldwell-Soule PSI	115.23	116.54	120.19	756	11.15**					
Pers.-Soc. Resp.	12.34	12.46	13.14	756	7.80**					
Assoc. Vocabulary	6.98	7.21	7.56	754	3.76*					
Concept Activ.-Numer.	7.62	7.25	7.95	752	5.37**	8.94	7.41	8.51	224	3.33*
Concept Activ.-Sensory	14.12	14.01	14.83	752	9.82**					

M_1 = Mean for low value on PIT-126A

M_2 = Mean for mid value

M_3 = Mean for high value

** F significant at .01 level

* F significant at .05 level

Table 102

ANALYSIS OF VARIANCE ON EMPHASIS ON INDEPENDENCE AND
SELF-CARE (IND-SELF): SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ					MID IQ					HIGH IQ				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet											94.41	93.77	96.79	503	4.97**
Caldwell-Soule PSI											120.28	122.72	125.46	416	8.04**
Pers.-Soc. Resp.											12.79	13.23	13.61	416	4.57*
Assoc. Vocabulary						7.05	7.87	7.68	338	4.49*	7.19	7.66	8.06	416	6.11**
Concept Activ.-Numer.						7.90	8.32	7.23	337	7.04**	7.58	8.20	8.35	416	4.14*
Concept Activ.-Sensory	14.51	15.49	14.87	399	3.65*										
Birch Work Resp.															
Birch Verbal Resp.											61.90	61.85	59.61	457	3.58*
Birch Spont. Resp.															
Animal House															
Factors Affect. Test Perf.						64.96	67.91	65.37	431	6.94**	66.39	68.53	67.66	506	5.95**

M_1 = Mean for low level of IND-SELF

M_2 = Mean for mid level

M_3 = Mean for high level

** F significant at .01 level

* F significant at .05 level

In the Mid (85-95) IQ group, program emphasis on independence and self-care was related only to two subtests of the Caldwell-Soule and on the FATP; in all cases for this group, the Middle level of the program variable was associated with the largest scores. The Low IQ group showed virtually no significant relationships.

b. Variations with Child's Age (Table 103)

The relationship of "program emphasis on independence and self-care" with performance was largely in the younger (under five years) age group.

c. Variations with Urbanicity (Table 104)

The division on this subsetting variable is interesting. For Urban children, there was a positive association of "program emphasis on independence and self-care" with higher cognitive performance (Stanford-Binet and Caldwell-Soule). For Non-Urban children, the program variable's relationship was entirely with the affective/social behaviors; though the patterns here are difficult to interpret, the negative relationship with Birch Verbal Responses is apparent.

3. Large-Muscle Equipment (MUSCLEQP)

a. Variations with Child's Initial IQ (Table 105)

The positive relationship of large-muscle equipment with Stanford-Binet scores occurred in both the Low and Mid IQ groups. In addition, the Low group showed a negative relationship of large-muscle equipment with the Caldwell-Soule numerical subscore, and the Mid IQ group showed a positive relationship with Birch Work Response scores. No significant relationships were found in the High IQ group.

b. Variations with Age (Table 106)

Most of the significant relationships between large-muscle equipment and performance were in the Old age group; for that group, higher values on MUSCLEQP were associated with higher Caldwell-Soule scores. The Young group showed a positive relationship only with the Caldwell-Soule Associative Vocabulary Subscore.

Table 103

ANALYSIS OF VARIANCE ON EMPHASIS ON INDEPENDENCE AND SELF-CARE (IND-SELF): SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	CHILD'S AGE									
	YOUNG					OLD				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet	95.46	94.59	97.71	668	7.84**					
Caldwell-Soule PSI	119.01	121.32	122.29	573	3.41*					
Pers.-Soc. Resp.										
Assoc. Vocabulary	6.69	7.30	7.54	572	6.91**					
Concept Activ.-Numer.										
Concept Activ.-Sensory										
Birch Work Resp.										
Birch Verbal Resp.										
Birch Spont. Resp.										
Factors Affect. Test Perf.	65.07	67.07	67.03	674	5.46**	65.48	66.94	65.56	802	3.20*

M_1 = Mean for Low level of IND-SELF

M_2 = Mean for mid level

M_3 = Mean for high level

** F significant at .01 level

* F significant at .05 level

Table 104

ANALYSIS OF VARIANCE ON EMPHASIS ON INDEPENDENCE AND
SELF-CARE (IND-SELF): SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN VS. NON-URBAN									
	URBAN					NON-URBAN				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet	94.20	93.25	95.66	1150	.0005					
Caldwell-Soule PSI	119.28	120.71	121.97	951	.0146					
Pers.-Soc. Resp.										
Assoc. Vocabulary	6.95	7.46	7.56	949	.0007					
Concept Activ.-Numer.										
Concept Activ.-Sensory										
Birch Work Response						88.89	91.35	90.79	301	3.13*
Birch Verbal Response						72.18	65.76	63.82	301	11.38**
Birch Spont. Response						111.07	111.01	111.96	301	3.46*
Factors Affect. Test Perf.						68.19	69.66	67.14	316	5.30**

M_1 = Mean for low level of IND-SELF

M_2 = Mean for mid level

M_3 = Mean for high level

** F significant at .01 level

* F significant at .05 level

Table 105

ANALYSIS OF VARIANCE ON LARGE-MUSCLE EQUIPMENT (MUSCLEQP):

SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	94.22	97.15	357	8.95**	94.26	96.58	351	7.44**				
Caldwell-Soule PSI												
Pers.-Soc. Resp.												
Assoc. Vocabulary					7.11	7.91	280	10.12**				
Concept Activ.-Numer.	7.56	6.77	292	8.84**								
Concept Activ.-Sensory												
Birch Work Response					89.95	91.47	300	4.39*				
Birch Verbal Response												
Birch Spont. Response												
Factors Affect. Test Perf.												

M_1 = Mean for low value on MUSCLEQP

M_2 = Mean for high value

** F significant at .01 level

* F significant at .05 level

Table 106

ANALYSIS OF VARIANCE ON LARGE-MUSCLE EQUIPMENT (MUSCLEQP):

SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	CHILD'S AGE							
	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Caldwell-Soule PSI					119.27	121.63	455	5.88*
Pers.-Soc. Resp.					12.85	13.40	456	7.12**
Assoc. Vocabulary	7.04	7.46	521	4.07*	7.19	7.67	455	6.37*
Concept Activ.-Numer.								
Concept Activ.-Sensory								
Birch Work Resp.								
Birch Verbal Resp.								
Birch Spont. Resp.								
Factors Affect. Test Perf.					65.88	67.88	579	9.61**

M_1 = Mean for low value on MUSCLEQP

M_2 = Mean for high value

** F significant at .01 level

* F significant at .05 level

c. Variations with Urbanicity (Table 107)

The major finding of interest on this subsetting variable is that, for the Non-Urban group only, there was a .01 level negative relationship between High values on large-muscle equipment, and the Birch Verbal and Birch Spontaneous Response Scores. These relationships were not found for any other subgroup, or for the overall sample.

4. Program Emphasis on Child Socialization (CHLDSOCL)

a. Variations with Child's Initial IQ Level (Table 108)

The relationships between child socialization and cognitive performance showed primarily with the High (over 95) IQ group. In fact, for this group, all subscores on the Caldwell-Soule, as well as the total Caldwell-Soule, were significantly related to the socialization variable. With the exception of the Sensory Subscore, all of these measures followed the pattern that a Middle level of emphasis was associated with higher scores than either a Low or a High level.

Level of emphasis on child socialization had little relationship with performance for either the Low or Middle IQ group. One exception is that greater emphasis was associated in the Low IQ children with better adaptation to test conditions (FATP).

b. Variations with Child's Age (Table 109)

There is no clear pattern here, though in general the level of emphasis on socialization was more strongly related to performance for Young children than for Old children. It is also interesting to note that, for the Young group, children in classes with the highest level of emphasis on socialization gave the most spontaneous responses to Birch test items.

Table 107

ANALYSIS OF VARIANCE ON LARGE-MUSCLE EQUIPMENT (MUSCLEQP): SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN VS. NON-URBAN							
	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet					94.90	97.60	253	4.49*
Caldwell-Soule PSI					120.88	123.86	243	4.26*
Pers.-Soc. Resp.								
Assoc. Vocabulary	7.09	7.46	732	5.06*				
Concept Activ.-Numer.	7.63	7.10	729	10.05**				
Concept Activ.-Sensory								
Birch Work Response								
Birch Verbal Response					70.06	65.48	272	14.00**
Birch Spont. Response					111.79	110.79	272	8.28**
Factors Affect. Test Perf.								

M_1 = Mean for low value on MUSCLEQP

M_2 = Mean for high value

** F significant at .01 level

* F significant at .05 level

Table 108

ANALYSIS OF VARIANCE ON EMPHASIS ON CHILD SOCIALIZATION (CHLDSOCL): SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ					MID IQ					HIGH IQ				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet															
Caldwell-Soule PSI											122.19	126.62	124.71	416	6.12**
Pers.-Soc. Resp.											13.02	13.69	13.52	416	3.53*
Assoc. Vocabulary											7.46	8.16	7.54	416	4.40*
Concept Activ.-Numer.											7.59	8.44	8.21	416	4.95**
Concept Activ.-Sensory						14.97	15.46	14.44	337	4.69**	14.48	15.12	15.20	417	3.94*
Birch Work Resp.															
Birch Verbal Resp.															
Birch Spont. Resp.															
Animal House															
Factors Affect. Test Perf.	64.33	64.87	67.08	523	4.72**										

M_1 = Mean for low emphasis on CHLDSOCL

M_2 = Mean for mid emphasis

M_3 = Mean for high emphasis

** F significant at .01 level

* F significant at .05 level

Table 109

ANALYSIS OF VARIANCE ON EMPHASIS ON CHILD SOCIALIZATION (CHLDSOCL): SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	CHILD'S AGE									
	YOUNG					OLD				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet						92.56	93.67	94.54	771	3.12*
Caldwell-Soule PSI	120.09	124.44	121.06	573	5.43**					
Pers.-Soc. Resp.										
Assoc. Vocabulary	6.88	7.72	7.15	572	5.76**					
Concept Activ.-Numer.										
Concept Activ.-Sensory										
Birch Work Resp.										
Birch Verbal Resp.						63.32	61.78	64.22	666	4.08*
Birch Spont. Resp.	111.97	111.26	112.26	585	5.32**					
Animal House										
Factors Affect. Test Perf.										

M_1 = Mean for low emphasis on CHLDSOCL

M_2 = Mean for mid emphasis

M_3 = Mean for high emphasis

** F significant at .01 level

* F significant at .05 level

c. Variations with Urbanicity (Table 110)

Subsetting on urbanicity reduced the apparent impact of the "child socialization" variable on cognitive performance, though for the Non-Urban subset, children in the High socialization group did obtain the highest Animal House scores (.05 level of significance). Level of emphasis on socialization also was related to Birch and FATP social-emotional measures for both Urban and Non-Urban children, but the direction of impact is inconsistent and difficult to interpret.

5. Level of Teacher's General Education Preparation (TGEDPREP)

a. Separate Analyses for Southern and Non-Southern Children

It was speculated in Chapter XI that certain apparent "effects" of Teacher's General Education Preparation might actually have been artifacts of the confounding of TGEDPREP with geographic region. Specifically, it was suggested that the negative relationships between TGEDPREP and certain performance measures might simply reflect the use of more structured (and therefore possibly superior) programs in the South, where many of the less-educated teachers were located.

To examine the relationships of the TGEDPREP variable without contamination by other program factors associated with geographic region, t-test comparisons of performance for two levels of TGEDPREP were made independently for Southern and Non-Southern children. The dependent variables for these analyses were the adjusted posttest values on measures which showed significant relationships with TGEDPREP for the total (Southern plus Non-Southern) sample.

The results of the comparisons are summarized in Table 111. The top part of the table shows the data for Southern children only, and the bottom part for Non-Southern children only. The left-hand column lists the dependent variables; these are followed (from left to right) by the sample size, mean, and standard deviation on each dependent variable for the Low group on TGEDPREP, and then by the sample size, mean, and standard deviations for the High group. The last column shows the t-score for the difference in means for the two groups. A double asterisk indicates a .01 level of significance, and a single asterisk designates a .05 level (based on a two-tailed test).

Table 110

ANALYSIS OF VARIANCE ON EMPHASIS ON CHILD SOCIALIZATION (CHLDSOCL): SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN VS. NON-URBAN									
	URBAN					NON-URBAN				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet										
Caldwell-Soule PSI										
Pers.-Soc. Resp.										
Assoc. Vocabulary										
Concept Activ.-Numer.										
Concept Activ.-Sensory										
Birch Work Response										
Birch Verbal Response						67.78	63.16	68.26	301	9.49**
Birch Spont. Response	112.17	111.65	112.36	950	3.98*					
Animal House						8.20	9.40	9.31	249	3.84*
Factors Affect. Test Perf.	65.30	65.15	66.59	1160	4.00*	69.89	67.95	69.71	316	3.50*

M_1 = Mean for low emphasis on CHLDSOCL

M_2 = Mean for mid emphasis

M_3 = Mean for high emphasis

** F significant at .01 level

* F significant at .05 level

Table 111

COMPARISON OF MEAN SCORES FOR TWO LEVELS OF TEACHER'S GENERAL EDUCATION PREPARATION (TGEDPREP)

DEPENDENT VARIABLE	SOUTHERN CHILDREN						
	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Caldwell Soule PSI	221	120.94	9.60	117	117.81	9.46	2.87**
Pers.-Soc. Resp.	221	13.78	2.22	117	13.07	1.93	3.07**
Concept Activ.-Numer.	221	8.39	2.05	117	8.34	2.16	0.19
Concept Activ.-Sensory	221	16.21	2.10	117	15.42	2.08	3.46**
Birch Work Response	195	91.32	6.26	135	91.46	5.91	0.23
Birch Verbal Response	195	68.74	8.79	135	63.07	9.32	5.62**
Factors Affect. Test Perf.	277	68.86	5.68	152	62.60	10.59	3.52**

DEPENDENT VARIABLE	NON-SOUTHERN CHILDREN						
	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Caldwell Soule PSI	145	120.91	12.78	492	118.50	11.08	2.41**
Pers.-Soc. Resp.	146	12.96	2.71	492	12.80	2.34	0.66
Concept Activ.-Numer.	146	7.50	2.37	492	7.37	2.39	0.61
Concept Activ.-Sensory	145	15.04	2.79	492	14.27	2.61	2.96**
Birch Work Response	144	92.14	6.56	546	90.42	6.80	2.26*
Birch Verbal Response	144	62.09	9.05	546	59.91	8.78	2.63**
Factors Affect. Test Perf.	188	66.76	6.74	580	66.99	7.11	0.40

M_1 = Mean for low value on TGEDPREP

M_2 = Mean for high value

** t significant at .01 level

* t significant at .05 level

The first finding of interest is that, as originally postulated, there was a much higher proportion of less-educated teachers in the Southern region. In the South, close to two-thirds of the Head Start teachers has less than a bachelor's degree, while in Non-Southern classes only about one-fourth lacked the degree.

A comparison of Table 111 with the analyses of variance for the total sample (Table 94) shows that the general pattern of relationships found for the pooled sample was also found in the separate t-test comparisons for Southern and Non-Southern children. For the Southern group, high values on Teachers' General Education Preparation were associated with lower values on the Caldwell-Soule (total score and two subscores), on the Birch Verbal Response score, and on the Factors Affecting Test Performance. Among the Non-Southern children, the performance of children with less-educated teachers was superior on the Caldwell-Soule, the Birch Work Response score, and the Birch Verbal Response score. It thus appears that the relationships shown by the TGEDPREP variable were not artifacts of South/Non-South confounding.

b. Variations with Child's Initial IQ Level (Table 112)

The pattern of relationships for Low initial IQ (under 85) and Mid (85-95) children was very closely parallel to that for the total sample. That is, adjusted posttest scores on the Caldwell-Soule, Birch Verbal Responses, and Factors Affecting Test Performance were at a lower level for children with more highly educated teachers. TGEDPREP was less strongly related to performance for the High IQ (over 95) group, showing no association with Caldwell-Soule scores or the Factors Affecting Test Performance.

c. Variations with Child's Age (Table 113)

Both the Young (under five years) and Old (five years or older) children followed the same general pattern of relationships as the total sample, i.e., lower adjusted posttest scores for children with more highly educated teachers. However, the Young children showed less relationship between level of teacher education and performance on the Caldwell-Soule and the Factors Affecting Test Performance (FATP).

Table 112

ANALYSIS OF VARIANCE ON TEACHER'S GENERAL EDUCATION PREPARATION (TGEDPREP): SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet												
Caldwell-Soule PSI	120.73	112.95	322	38.54**	120.96	117.94	281	5.56*				
Pers.-Soc. Resp.	13.54	12.27	322	20.54**	13.53	12.66	281	9.57**				
Assoc. Vocabulary	7.23	6.22	321	17.71**								
Concept Activ.-Numer.	8.14	7.04	322	19.24**								
Concept Activ.-Sensory	16.03	13.67	320	61.54	15.90	14.35	281	26.57**				
Birch Work Response									92.48	90.49	359	6.54*
Birch Verbal Response	65.71	59.70	335	27.88**	67.94	61.31	305	40.00**	64.42	60.61	359	13.37**
Brich Spont. Response												
Factors Affect. Test Perf.	67.85	63.32	419	30.54**	67.96	65.87	359	6.59*				

M_1 = Mean for low level of TGEDPREP

M_2 = Mean for high level

** F significant at .01 level

* F significant at .05 level

Table 113

ANALYSIS OF VARIANCE ON TEACHER'S GENERAL EDUCATION PREPARATION (TGEDPREP): SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	CHILD'S AGE							
	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Caldwell-Soule PSI					121.06	117.92	520	12.14**
Pers.-Soc. Resp.					13.79	12.98	521	17.94**
Assoc. Vocabulary								
Concept Activ.-Numer.								
Concept Activ.-Sensory	15.00	14.09	452	10.80**	16.11	14.98	521	30.62**
Birch Work Response	92.51	90.55	462	6.42*				
Birch Verbal Response	62.10	60.10	462	4.20*	67.61	61.02	558	69.80**
Birch Spont. Response								
Factors Affect. Test Perf.					68.25	65.63	669	20.68**

M_1 = Mean for low level of TGEDPREP

M_2 = Mean for high level

** F significant at .01 level

* F significant at .05 level

d. Variations with Urbanicity (Table 114)

There was a fairly distinct separation in the patterns for these two subsets of children. For Urban children, level of teacher education was significantly related (in the negative direction) to almost all cognitive and affective dependent variables used in the analysis. By contrast, practically none of the relationships appear for the Non-Urban children.

J. Teacher's Paid Experience with Disadvantaged Young (PDEXDSYG)

a. Separate Analyses for Southern and Non-Southern Children

PDEXDSYG was another variable for which the apparent relationships with performance were suspected of being artifacts of confounding with Southern/Non-Southern regions, since larger proportions of inexperienced teachers were located in the South. To eliminate such contamination by regional factors, one-tailed t-test comparisons of performance for two levels of PDEXDSYG were made independently for Southern and Non-Southern children. The results of these are shown in Table 115.

When Southern children were analyzed separately, the differences in performance associated with different levels of prior paid experience (some vs. none) were diminished. There were no statistically significant differences between children of teachers with and without prior experience, on the total Caldwell-Soule or its subtests. Prior paid experience was, however, negatively related to the parents' feeling of personal power.

Among Non-Southern children, there was still a statistically significant negative relationship between prior paid experience and children's performance on the Caldwell-Soule. This may be in part because the Non-Southern group had larger sample sizes than the Southern group, especially for the High level on PDEXDSYG.

Table 114

ANALYSIS OF VARIANCE ON TEACHER'S GENERAL EDUCATION PREPARATION (TGEDPREP): SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN VS. NON-URBAN							
	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Caldwell-Soule PSI	120.71	117.90	721	9.36**				
Pers.-Soc. Resp.	13.25	12.79	721	5.38*				
Assoc. Vocabulary	7.53	7.13	720	5.08*				
Concept Activ.-Numer.	7.84	7.45	720	4.08*				
Concept Activ.-Sensory	15.32	14.32	720	22.55**	16.25	15.57	253	4.86*
Birch Work Response	92.27	90.53	728	7.84**				
Birch Verbal Response	62.70	60.17	728	9.78**	68.34	62.66	292	23.52**
Birch Spont. Response			728					
Factors Affect. Test Perf.	67.37	65.68	888					

M_1 = Mean for low level of TGEDPREP

M_2 = Mean for high level

** F significant at .01 level

* F significant at .05 level

Table 115

COMPARISON OF MEAN SCORES FOR TWO LEVELS OF TEACHER'S PAID EXPERIENCE WITH DISADVANTAGED YOUNG (PDEXDSYG)

DEPENDENT VARIABLE	SOUTHERN CHILDREN						
	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Caldwell-Soule PSI	284	120.10	9.77	54	118.62	8.98	1.08
Pers.-Soc. Resp.	284	13.51	2.19	54	13.63	1.97	0.42
Concept Activ.-Sensory	285	15.96	2.14	53	15.77	2.02	0.64
Parent Feeling of Power	159	126.66	23.69	40	113.90	25.82	2.81**

DEPENDENT VARIABLE	NON-SOUTHERN CHILDREN						
	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Caldwell-Soule PSI	445	119.84	11.15	192	117.19	12.18	2.57*
Pers.-Soc. Resp.	446	13.03	2.41	192	12.38	2.40	3.15**
Concept Activ.-Sensory	445	14.61	2.68	192	14.08	2.60	2.33*
Parent Feeling of Power	375	124.01	27.34	114	118.06	23.56	2.26*

M_1 = Mean for low value on PDEXDSYG

M_2 = Mean for high value

** t significant at .01 level

* t significant at .05 level

In summary, the division of children into Southern and Non-Southern groups weakened but did not eliminate the general relationships between PDEXDSYG and performance that were noted in the analyses of variance for the pooled sample. Much of the weakening of the relationships, in fact, can probably be attributed to the reduction in sample sizes when the children's data were subgrouped.

b. Variations with Child's Initial IQ Level (Table 116)

Most of the significant relationships between "paid experience" and performance were in the Low (below 85) IQ group of children; for this group, level of paid experience was negatively related to Caldwell-Soule scores and to the parents' feeling of personal power. For the Middle (85-95) IQ group, "paid experience" had much less association with cognitive performance but was negatively related to the children's adjustment to test conditions (FATP). In the High (over 95) IQ group, the major association of the independent variable was with the parents' feeling of power.

c. Variations with Child's Age (Table 117)

Although there were some differences in the pattern of relationships with specific Caldwell-Soule subscores, in general both Young and Old children followed the trend of lower performance on the Caldwell-Soule and on parents' feeling of power for children in classes whose teachers had prior paid experience.

d. Variations with Urbanicity (Table 118)

The negative association between "paid experience" and performance was almost exclusively in the Urban group.

7. Emphasis on Language Program (LANG-PRG)

a. Variations with Child's Initial IQ (Table 119)

In the Low initial IQ group, strong language emphasis was associated with higher values on two subscores of the Caldwell-Soule and on the parents' feeling of personal power; the positive relations with the Caldwell-Soule subscores also occurred in the Mid IQ group. The negative associations of

Table 116

ANALYSIS OF VARIANCE ON TEACHER'S PAID EXPERIENCE WITH DISADVANTAGED YOUNG (PDEXDSYG): SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet												
Caldwell-Soule PSI	118.78	113.31	322	10.68**								
Pers.-Soc. Resp.	12.96	11.71	322	11.69**					13.34	12.81	328	4.33*
Assoc. Vocabulary												
Concept Activ.-Numer.	7.76	6.53	322	14.18**								
Concept Activ.-Sensory	15.08	13.75	320	10.40**	14.88	14.05	281	6.09*				
Factors Affect. Test Perf.					67.13	65.20	359	4.66*				
Parent Feeling of Power	126.03	115.26	215	5.40*					124.85	113.31	226	7.91**
Parent Feeling of Alien.												

M_1 = Mean for low level of PDEXDSYG

M_2 = Mean for high level

** F significant at .01 level

* F significant at .05 level

Table 117

ANALYSIS OF VARIANCE ON TEACHER'S PAID EXPERIENCE WITH DISADVANTAGED YOUNG (PDEXDSYG): SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	CHILD'S AGE							
	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Caldwell-Soule PSI	120.27	117.86	453	4.03*	120.32	117.63	520	6.36*
Pers.-Soc. Resp.	12.70	12.08	453	5.79*				
Assoc. Vocabulary								
Concept Activ.-Number.					8.36	7.70	521	8.13**
Concept Activ.-Sensory					15.45	14.52	521	14.20**
Factors Affect. Test Perf.								
Parent Feeling of Power	123.43	116.19	342	4.84*	125.45	116.63	339	6.80**
Parent Feeling of Alien.								

M_1 = Mean for low level of PDEXDSYG

M_2 = Mean for high level

** F significant at .01 level

* F significant at .05 level

Table 118

ANALYSIS OF VARIANCE ON TEACHER'S PAID EXPERIENCE WITH DISADVANTAGED YOUNG (PDEXDSYG): SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN VS. NON-URBAN							
	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet								
Caldwell-Soule PSI	119.60	117.48	721	5.54*				
Pers.-Soc. Resp.	12.86	12.40	721	5.66*				
Concept Activ.-Numer.								
Concept Activ.-Sensory	14.53	14.07	720	4.79*				
Factors Affect. Test Perf.								
Parent Feeling of Power	124.01	117.12	548	7.57**	125.77	112.81	138	4.03*
Parent Feeling of Alien.								

M_1 = Mean for low level of PDEXDSYG

M_2 = Mean for high level

** F significant at .01 level

* F significant at .05 level

Table 119

ANALYSIS OF VARIANCE ON EMPHASIS ON LANGUAGE PROGRAMS (LANG-PRG): SUBSET BY PRETEST IQ

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet									96.30	94.47	411	4.01*
Caldwell-Soule PSI												
Pers.-Soc. Resp.					12.36	13.02	300	7.26**				
Assoc. Vocabulary												
Concept Activ.-Numer.	6.54	7.65	346	18.28**	7.15	7.69	299	4.36*				
Concept Activ.-Sensory	13.55	14.99	344	19.38**	13.92	14.79	299	9.83**				
Birch Work Response												
Birch Verbal Response												
Birch Spont. Response									110.71	111.93	375	15.06**
Factors Affect. Test Perf.												
Parent Feeling of Power	120.14	127.79	235	5.18*								

M_1 = Mean for low value on LANG-PRG

M_2 = Mean for high value

** F significant at .01 level

* F significant at .05 level

language emphasis with Stanford-Binet performance were entirely restricted to the High IQ group, which also showed a positive association with the number of spontaneously extended responses to Stanford-Binet test items.

b. Variations with Child's Age (Table 120)

There was a marked difference in relationships between language emphasis and performance for Young (under five years) and Old (five years and over) children. For Young children, a strong language emphasis was associated with lower scores on the Binet, on two subscores of the Caldwell-Soule, and on Birch Work and Verbal Responses. For Old children, by contrast, a strong language emphasis was associated with higher scores on three Caldwell-Soule subscores as well as on Birch Verbal and Spontaneous Responses.

c. Variations with Urbanicity (Table 121)

For Urban children, the effects of language emphasis followed about the same pattern as for the total sample; high values on LANG-PRG were associated with significantly lower adjusted posttest scores on the Stanford-Binet and on two of the Birch scores (Work Response and Verbal Response), but with higher performance on two subscores of the Caldwell-Soule and on Birch Spontaneous Responses. There were fewer significant relationships for the Non-Urban children; those all favored a strong emphasis on language.

8. Teacher's Quality of Cognitive Input (POT-COGN)

a. Variations with Child's Initial IQ Level (Table 122)

For the Low initial IQ group, a High "quality of cognitive input" was associated (.05 level of significance) with higher Caldwell-Soule performance but also with increased parents' feeling of alienation. There was a significant (.01 level) relationship with Binet performance for High IQ children; a Middle level of "teacher's quality of cognitive input" was superior to both the Low level and the High level. No significant effects of "quality of cognitive input" were found in the Middle IQ children.

Table 120

ANALYSIS OF VARIANCE ON EMPHASIS ON LANGUAGE PROGRAMS (LANG-PRG): SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	CHILD'S AGE							
	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	96.92	95.26	543	4.70*				
Caldwell-Soule PSI								
Pers.-Soc. Resp.					12.75	13.20	559	5.53*
Assoc. Vocabulary	7.17	6.60	468	6.04*				
Concept Activ.-Numer.	6.93	6.33	466	7.10**	7.61	8.38	559	15.95**
Concept Activ.-Sensory					14.15	15.21	559	26.71**
Birch Work Resp.	91.15	89.24	485	8.12**				
Birch Verbal Resp.	60.16	56.64	485	17.46**	61.74	64.28	604	9.56**
Birch Spont. Resp.					110.93	111.97	604	14.60**
Factors Affect. Test Perf.								
Parent Feeling of Power								

M_1 = Mean for low value on LANG-PRG

M_2 = Mean for high value

** F significant at .01 level

* F significant at .05 level

Table 121

ANALYSIS OF VARIANCE ON EMPHASIS ON LANGUAGE PROGRAMS (LANG-PRG): SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN VS. NON-URBAN							
	URBAN				NON-URBAN			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	95.62	93.86	946	10.19**				
Caldwell-Soule PSI								
Pers.-Soc. Resp.								
Assoc. Vocabulary								
Concept Activ.-Numer.	7.07	7.56	763	7.95**				
Concept Activ.-Sensory	13.74	14.34	763	10.36**	14.73	15.85	261	13.23**
Birch Work Resp.	91.18	89.82	789	7.91**				
Birch Verbal Resp.	60.22	58.84	789	4.66*	62.79	68.41	300	23.97**
Birch Spont. Resp.	111.39	112.17	789	10.98**	110.60	111.41	300	6.36*
Factors Affect. Test Perf.								
Parent Feeling of Power								

M_1 = Mean for low value on LANG-PRG

M_2 = Mean for high value

** F significant at .01 level

* F significant at .05 level

Table 122

ANALYSIS OF VARIANCE ON TEACHER'S QUALITY OF COGNITIVE INPUT (POT-COGN): SUBSET BY CHILD'S AGE AND PRETEST IQ

DEPENDENT VARIABLE	CHILD'S AGE									
	YOUNG					OLD				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet										
Caldwell-Soule PSI						118.12	120.70	120.33	636	3.00*
Factors Affect. Test Perf.										
Parent Feeling of Alien.						16.55	16.30	17.32	436	4.90**

DEPENDENT VARIABLE	LOW IQ					MID IQ					HIGH IQ				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet											95.23	96.10	92.96	175	5.08**
Caldwell-Soule PSI	115.45	117.89	119.66	399	3.16*										
Factors Affect. Test Perf.															
Parent Feeling of Alien.	16.47	16.37	17.53	284	4.45*										

M_1 = Mean for low level of POT-COGN

M_2 = Mean for mid value

M_3 = Mean for high value

** F significant at .01 level

* F significant at .05 level

b. Variations with Child's Age (Table 122)

Significant relationships between "quality of cognitive input" and performance were restricted to the Old children (five years or older). For this group, higher values on POT-COGN were associated with higher Caldwell-Soule scores, but also with greater parent feelings of alienation.

c. Variations with Urbanicity (Table 123)

Among Urban children, higher quality of cognitive inputs (as rated by observers) was associated with greater parent feelings of alienation. There were no significant relations in the Non-Urban group.

9. Cognitive Learning Materials (COGNMATL)

The analyses of variance for this program variable were the first to be computed, and the subsetting variables were somewhat different from those finally selected for subsequent analyses. Age was used, as with other program variables; the other subsetting variable was mother's education level. Mother's education was used to define three groups: a Low group of mothers with an 8th grade education or less, a Mid group with education of 9th to 11th grade, and a High group with a 12th grade education or higher.

a. Variations with Mother's Education Level (Table 124)

For the High group on mother's education, the larger the amount of cognitive materials, the higher the Binet IQ performance; a middle amount of cognitive material was best for the Caldwell-Soule Associative Vocabulary Subscore, however. The Mid group on mother's education showed a drop in Animal House scores with higher amounts of cognitive materials; however, the High cognitive material group made significantly more Birch Work Responses, suggesting possibly a stronger work orientation. For the Low group on mother's education, the middle level of cognitive materials yielded best results on both the Caldwell-Soule Associative Vocabulary Subscore and the number of Birch Work Responses.

Table 123

ANALYSIS OF VARIANCE ON TEACHER'S QUALITY OF COGNITIVE INPUT (POT-COGN): SUBSET BY URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN VS. NON-URBAN									
	URBAN					NON-URBAN				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet										
Caldwell-Soule PSI										
Factors Affect. Test Perf.										
Parent Feeling of Alien.	16.35	16.34	17.12	722	4.25*					

M_1 = Mean for low level of POT-COGN

M_2 = Mean for mid level

M_3 = Mean for high level

* F significant at .05 level

Table 124

ANALYSIS OF VARIANCE ON COGNITIVE LEARNING MATERIALS (COGNMATL): SUBSET BY MOTHER'S EDUCATION LEVEL

DEPENDENT VARIABLE	LOW EDUC. (BELOW 8th GRADE)					MID EDUC. (9th TO 11th GRADE)					HIGH EDUC. (ABOVE 11th GRADE)				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet											93.94	95.38	98.39	291	8.68**
Caldwell-Soule PSI															
Pers.-Soc. Resp.															
Assoc. Vocabulary	6.03	7.77	7.36	108	6.17**										
Concept Activ.-Numer.															
Concept Activ.-Sensory											13.99	15.25	14.45	298	5.17**
Animal House						9.67	9.24	8.83	315	3.56*					
Birch Work Resp.	88.68	93.90	91.21	100	4.12*	87.83	90.23	91.92	274	9.60**					
Birch Verbal Resp.											61.50	58.39	61.07	226	3.35*
Birch Spont. Resp.						111.89	111.08	112.29	274	3.34*					

M_1 = Mean for low value on COGNMATL

M_2 = Mean for mid value

M_3 = Mean for high value

**** F significant at .01 level**

*** F significant at .05 level**

b. Variations with Child's Age (Table 125)

As with several other program variables, amount of cognitive material showed a stronger relationship with cognitive performance for the Young children (under five years) than for the Old children (five years or older). The analyses for the Young children showed the positive relationship of COGNMATL with Stanford-Binet IQ and the negative relationship with the Animal House. The Old group showed the positive relationship with the Birch Work Response score.

10. Parent-Centered Program (PARNTCNT)

The analyses of variance for different subsets of children (Table 126) confirmed what was shown in the analysis for the overall sample: namely, that degree of involvement of parents had little relationship with either the children's performance or the parents' attitudes. This probably reflects the small range of variations of different programs on the PARNTCNT scale.

C. SUMMARY

The data reported in this chapter clearly show that there were interaction effects between program variables and child-description variables. That is, a program approach that was associated with superior performance for one group of children was not necessarily superior for another group, and in some cases there were reversals in the direction of the associations.

One illustration of the interaction effects can be seen in the analyses for Teacher's Use of Physical Control (see Table 100). For Young children (under five years of age), teacher avoidance of physical control and discipline was significantly associated (.01 level) with higher Caldwell-Soule performance. For Old children (five years or older), there was no significant relationship between "Physical Control" and Caldwell-Soule scores. One possible interpretation is that the older children had already acquired some well-ingrained work habits that were less influenced by the teacher's method of control. In any event, a logical conclusion might be that Head Start teachers should be warned

Table 125

ANALYSIS OF VARIANCE ON COGNITIVE LEARNING MATERIALS (COGNMATL): SUBSET BY CHILD'S AGE

DEPENDENT VARIABLE	CHILD'S AGE									
	YOUNG					OLD				
	M_1	M_2	M_3	D.F.	F	M_1	M_2	M_3	D.F.	F
Stanford-Binet	95.26	96.75	97.59	606	3.99*					
Caldwell-Soule PSI										
Pers.-Soc. Resp.										
Assoc. Vocabulary										
Concept Activ.-Numer.										
Concept Activ.-Sensory	13.83	14.72	14.34	521	4.57*	14.70	15.58	14.80	458	5.17**
Animal House	9.96	9.63	9.22	487	3.67*					
Birch Work Resp.						88.58	90.30	91.10	511	5.52**
Birch Verbal Resp.	60.92	58.56	59.94	514	3.12*	61.16	66.84	62.22	511	17.22**

M_1 = Mean for low value on COGNMATL

M_2 = Mean for mid value

M_3 = Mean for high value

** F significant at .01 level

* F significant at .05 level

Table 126

ANALYSIS OF VARIANCE ON PARENT-CENTERED PROGRAM (PARNTCNT): SUBSET BY CHILD'S AGE, PRETEST IQ, AND URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	CHILD'S AGE							
	YOUNG				OLD			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet	95.30	93.55	555	5.61*				
Birch Spont. Resp.								
Factors Affect. Test Perf.					66.93	65.57	720	5.42*

DEPENDENT VARIABLE	LOW IQ				MID IQ				HIGH IQ			
	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F	M_1	M_2	D.F.	F
Stanford-Binet												
Birch Spont. Resp.					112.61	111.83	333	4.81*				
Factors Affect. Test Perf.	66.53	64.46	458	6.43*								

DEPENDENT VARIABLE	URBAN VS. NON-URBAN							
	URBAN				NON-URBAN			
	M_1	M_2	D.F	F	M_1	M_2	D.F.	F
Stanford-Binet								
Birch Spont. Resp.					112.01	110.43	287	23.21**
Factors Affect. Test Perf.								

M_1 = Mean for low value on PARNTCNT (i.e., not parent-centered)

M_2 = Mean for high value (parent centered)

**** F significant at .01 level**

*** F significant at .05 level**

against the use of even mild physical punishment or control, especially in working with younger children. Caution must be taken in interpreting this finding, however, since only an association of variables, not a cause-and-effect relationship, has been demonstrated. It is conceivable, for example, that teachers who reported a certain type of control of students also had other characteristics that made them effective or ineffective teachers, and that the mode of control per se had no direct effect on children's performance.

Another example of apparent interactions between program variables and child-description variables is the analysis of "Emphasis on Child Independence and Self-Care" (Table 102). For High (85 to 95) initial IQ children, a heavy program emphasis on independence and self-care was associated with superior performance (.01 level) on both the Stanford-Binet and the Caldwell-Soule; this suggests that cognitive development for this group may be fostered by focusing class activities more heavily on the children's ability to solve problems by themselves, to care for themselves and act independently, and in general to do things "on their own." (Again, this conclusion is only an inference, since causality has not been demonstrated.) This relationship between IND-SELF and cognitive performance is almost totally absent for the Low and Mid IQ levels.

An example of an actual reversal in direction of a program variable's relationship with performance can be seen in the analysis for "Emphasis on Language Program" (see Table 120). For Young children, a strong language emphasis was associated (.01 level) with lower performance on one subscore of the Caldwell-Soule and on the Birch Verbal Response score; for Old children, a strong language emphasis was associated (.01 level) with higher performance on those same measures.

Up to this point, the results of the analyses have been organized primarily by program variable, and secondarily by subsetting variable. But perhaps a more meaningful perspective is, "Given a certain type of child, what approach should be emphasized for that child?" In the following paragraphs, different subgroups of children (as defined by three subsetting variables: initial IQ, age, and urban/non-urban residency) are listed, and for each subgroup there is a brief summary description of the specific program features that were associated with the best performance on different measures for that subgroup. For convenience, these descriptions refer to "benefits" of particular program approaches, but as noted previously, causality can only be inferred from the statistical associations.

1. IQ--Low (Below 85)

These children generally benefited from teachers who used no physical control techniques (or at least reported no use), and from programs where strong emphasis was placed on language program activities and goals (LANG-PRG).

2. IQ--Middle (85-95)

Beneficial program characteristics for this group included a strong emphasis on language program activities (LANG-PRG); availability of large amounts and variety of large-muscle equipment (MUSCLEQP); and a middle level of emphasis on independence and self-care (IND-SELF).

3. IQ--High (over 95)

Program features found beneficial included a high level of emphasis on independence and self-care (IND-SELF); a middle level of emphasis on child socialization goals (CHLDSOCL); and a teacher who used no physical control (PIT-126A).

4. Age--Young (under 60 months)

Children in this group benefited from programs with a high level of emphasis on independence and self-care (IND-SELF); low emphasis on language program activities (LANG-PRG); and teachers who used no physical control (PIT-126A).

5. Age--Old (60 months or over)

This group was helped by a high level of availability of large-muscle equipment (MUSCLEQP) and a high level of emphasis on language program activities (LANG-PRG).

6. Urban Children

Conditions beneficial to this group were a high level of emphasis on independence and self-care (IND-SELF) and teachers who did not use physical control techniques (PIT-126A).

7. Non-Urban Children

None of the variables evaluated (except TGEDPREP and PDEXDSYG) showed consistent differential impact on this group. This may have been because the Non-Urban group was much smaller than the Urban group, so that performance differences within the Non-Urban group had less chance to reach statistical significance.

Assuming that the associations found between performance, program variables and child-description variables represent true cause-and-effect relationships, rather than concomitant variations or other statistical artifacts, what are the implications for Head Start? The major implication is that the present Head Start policy of attempting to individualize the children's learning experiences should be encouraged and extended, and different teaching approaches should be emphasized for different subgroups of children. The following chapter includes suggestions as to possible means of achieving greater individualization of the Head Start classroom interactions.

CHAPTER XIII

SUMMARY AND CONCLUSIONS

Project Head Start is a comprehensive intervention program designed to provide disadvantaged children with a wide range of services to meet their needs and to contribute to their enjoyment of a healthy, happy childhood. In concert with other programs directed to the needs of adults, Head Start is intended to provide opportunities for each child to reach his fullest developmental potential in his later school work and in his life as an adult. Approximately 360,000 children are presently being served by Head Start centers in communities in every state and territory.

Head Start programs have a number of distinct components: teacher-aide training; career development; social services; health services, including medical and dental care and education; nutrition; volunteer and community participation; parent participation at policy and operational levels; and the actual classroom program. Thus, although Head Start is often thought of in the context of preschool compensatory education, education in the narrowly academic sense is only one part of a multifaceted program that is also concerned with the children's affective, social, and physical development, and with strengthening the communities of which the Head Start programs are a part.

This report describes the characteristics of children, families, and programs in samples of full-year classes operating in 1968-69. A supplementary report will present findings from 1966-67 and 1967-68 samples. The study was designed to identify changes associated with Head Start participation, and the conditions under which these changes were greatest. There were no control groups of eligible children who did not attend Head Start; the emphasis is on comparisons within the Head Start sample to see what kinds of classroom experiences "work best" for what kind of children. This is not a comprehensive report on Head Start; only some aspects of child development in relation to only one component of the program--the child's classroom experience--are considered.

The goal of this study is to provide information to Project Head Start decision-makers and other interested parties that will aid them in further improving the effectiveness of future Head Start programs. The main research issue which the study is designed to help answer is: For a variety of different Head Start goals (cognitive growth, social-emotional development, and parent attitudes), what program characteristics or approaches were associated with the greatest gains for different kinds of children? This general issue can be restated as a series of more specific questions, as follows:

- What were the sample children and their parents like at the time the children entered Head Start in 1968? Were they a fairly homogeneous group, or did they vary substantially on important personal, cognitive, social-emotional, and socio-economic dimensions?

- What were the Head Start programs like? Did they differ widely on various dimensions of resources and approaches, or were they interchangeable, for all practical purposes?

- What changes occurred in the sample children and their parents over the evaluation period?

- Were there differences in magnitude or direction of changes for different kinds of children?

- Were certain kinds of programs associated with greater child and parent gains than other kinds of programs?

- Did certain kinds of children make greater gains in certain kinds of programs?

Later sections of this chapter summarize and interpret the findings on each of the above questions, and where possible, relate the results to findings from earlier studies of Head Start or other early childhood intervention programs. Implications of the major findings for future Head Start planning are also discussed.

Before reviewing the results of the study, however, it is important to summarize briefly the sources of data on which the analyses were based. A few of the measures, such as the Stanford-Binet test of general intelligence, were standardized instruments for which general population norms have been developed. Most of the instruments, however, were developed for use with disadvantaged children, and several were created specifically for Head Start (e.g., the Gumpgookies test of achievement motivation); for these instruments, since there are no general-population norms, the primary interest is in how scores changed during the evaluation period, and in how they differed among groups of children, rather than in their absolute magnitude.

A. DATA COLLECTION INSTRUMENTS

The data collection instruments used in 1968-69 can be classified under three major headings:

- Instruments designed to record data on the background and performance of the Head Start children.

- Instruments pertaining to the children's parents and families.

- Instruments pertaining to the Head Start centers and classes.

1. Instruments Pertaining to Children

Instruments designed to measure cognitive growth included the Stanford-Binet Intelligence Test, the Caldwell-Soule Preschool Inventory, and the Animal House subtest of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI)

The Stanford-Binet is a well-known measure of overall cognitive development, and has been found in numerous studies to be generally predictive of school success. The version used in this evaluation was the Terman and Merrill 1961 scale.

The Caldwell-Soule Preschool Inventory used in 1968-69 was designed as a brief assessment and screening procedure for individual use with children from three to six years old. It was developed to provide a measure of achievement in areas considered essential for school success. A specific goal in the construction of the Caldwell-Soule was to provide a test that would be highly sensitive to experience, and would thus reflect the impact of educational intervention.

According to the test manual, the Animal House is designed "to measure ability to learn new things," rather than to measure previously gained knowledge. It requires the child to perform a categorization task.

Several of the instruments used fall into the social-emotional domain. One of these, the Sociometric Picture Play Board, was used mid and post to obtain "popularity" indices for different children in several play situations. On this instrument the child selects, from an array of pictures of his classmates, the person with whom he would like to play. The results can be analyzed to study group dynamics among classmates.

Another measure introduced in the 1968-69 study was the Gumpgookies, used pre and post to determine the children's achievement motivation. This is a projective technique in which the child indicates which of two cartoon-like figures is "his" Gumpgookie; for example, the Gumpgookie going out to play or the Gumpgookie painting a picture. The more task-oriented responses are considered to show higher achievement motivation.

A modification of the Hertzig-Birch (hereafter referred to as "the Birch") system of describing response styles was used as an index of the affective component of cognitive behavior. This is a system for describing the way in which a child responds to a Stanford-Binet test item. For example, he can pass an item by doing only what is required (delimitation) or by doing something more than is required (spontaneous extension). He can fail an item by doing the task but doing it incorrectly (work response), or by not attempting to do the task at all (non-work response). He can make a response verbally or nonverbally.

After completing the Stanford-Binet with the Birch response procedure, the examiner filled in the Inventory of Factors Affecting Test Performance. This rating scale indicates the degree to which attitudinal and emotional factors might have impaired the child's Binet performance; it also provides a measure of each child's ability to adapt to the test conditions.

2. Instrument Pertaining to Parents and Families

Pre and post data on the parents and families were collected on a Parent Interview form. Three kinds of data were obtained: (1) demographic, such as age and education of parents and siblings, (2) behavioral, such as mother's participation in community and Head Start activities, and (3) dynamic and process factors, such as mother's reported mode of control over the child, her aspirations and expectations for his development, and her attitudes of optimism, alienation, and hopelessness.

3. Instruments Pertaining to Programs

Several forms were used to collect information about the classrooms. The Class Register form included information about the class composition, the Characteristics of Teaching Staff contained items about the teachers and aides, and the Classroom Facilities and Resources Inventory described in great detail the physical aspects of the learning environment.

Instruments used to obtain more dynamic and interactive data about the programs were the Classroom Observation of Substantive Curricular Input (OSCI), the Post-Observation of the Teacher (P.O.T.), the Post Program Interview with Teacher (PPIWT), and the Checklist of Administrative Variables. The OSCI, developed by UCLA, is a time-sampling observation of the on-going activities of the class, and provides information on such questions as: Do teachers or children control activities? What proportion of the time is spent in free play? In activities developing small-muscle skills? In activities developing language skills? In whole-group activities? In small groups?

The P.O.T. inventory was filled in after each observation with the OSCI. It includes several categories of information about the teacher's classroom behavior that were felt to be important for child development.

The PPIWT was administered after the end of the program year to provide a teacher-reported inventory of program features (curriculum, teacher training and attitudes, parent participation, etc.), which provided the operational definition of the experimental treatment.

The Checklist of Administrative Variables was completed after the evaluation program by the classroom teacher. It was used to determine who made various administrative decisions involved in the conduct of the various components of the Head Start programs (e.g., selection of the children, evaluation of teacher training, planning of parent meetings). For each decision, two questions were asked: (1) was the activity undertaken? and (2) who participated in making decisions about the activity (e.g., administrators, teachers, parents, etc.)?

B. MAJOR FINDINGS

1. Entry Characteristics of Children and Parents

What kinds of children entered Head Start in 1968?

The total range of ages was from three years to about seven years, but over 98% of the children were between four years and six-and-a-half years old. They were almost evenly divided between boys and girls. Over three-fourths (77.28%) were from urban centers of over 50,000 population, and the remaining fourth were from smaller towns, suburbs, and rural communities. About two-thirds were black. In relation to the national population distribution, Head Start enrollment was somewhat concentrated in the South, although 65.5% of the total sample of Head Start children were in states outside the South.

There was considerable evidence that the prior educational opportunities of most of the Head Start enrollees had been quite limited. Fewer than a fifth (18.91%) of the children had previously attended Head Start or other preschool programs. In addition, the typical Head Start child had little prior exposure to reading materials at home; for example, most children had been read to by an adult for only about an hour each week.

On the two cognitive measures that had general-population norms, i.e., Stanford-Binet and Animal House tests of intelligence, the overall pretest means for the total sample were below the national average. The Head Start children's initial Stanford-Binet mean IQ was 89.04, compared to the general-population "norm" of 100. Similarly, Head Start children had a mean entry score on the Animal House of 8.45, whereas the general average is 10.

While noting the overall tendency for Head Start children to have lower-than-average entry scores on the standardized tests, it should be emphasized that the children's scores covered a broad range; for example, the Stanford-Binet IQ scores ranged from under 70 to over 120. Similar variability was found on virtually all of the cognitive and social-emotional measures, including those specially developed for Head Start. This finding clearly indicates the fallacy of thinking of Head Start enrollees as a homogeneous group.

Almost a fifth of the entering children had previously participated in Head Start or other preschool programs. Did they differ in entry skills from children without such experience?

Table 127 shows that the children with prior Head Start/preschool experience had significantly higher pretest performance on the Stanford-Binet (.05 level), the total Caldwell-Soule (.01 level), and all of the Caldwell-Soule subscores. Evidently the earlier learning experiences had fostered readiness skills of the sort required by standardized aptitude tests; there was no apparent advantage for the prior-experience children in the social-emotional domain, however. All of these findings must be interpreted with caution, since it cannot be proven that the children with prior Head Start/preschool experience were initially matched to the children who had not received such experience.

Table 127

COMPARISON OF PRETEST SCORES FOR CHILDREN WITH AND WITHOUT PRIOR PRESCHOOL EXPERIENCE

	No Prior Preschool			Prior Preschool			
Dependent Variable	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Stanford-Binet	1176	89.07	14.26	290	91.42	13.82	2.53*
Caldwell-Soule	984	108.05	18.37	248	117.11	17.83	6.98**
Pers.-Soc. Resp. Subscore	985	10.34	3.65	248	12.15	3.53	7.01**
Assoc. Vocabulary Subscore	983	5.04	2.83	248	6.33	2.89	6.39**
Concept Activ.-Numer. Subscore	981	5.80	2.76	248	6.92	2.93	5.63**
Concept Activ.-Sensory Subscore	980	11.28	4.06	248	12.87	3.94	5.53**
Animal House	935	8.43	2.80	248	8.73	2.69	1.52
Birch Work Response	993	90.39	7.82	277	90.09	8.08	0.56
Birch Verbal Response	993	56.16	10.92	277	57.26	11.09	1.47
Birch Spont. Response	993	111.33	4.07	277	112.55	3.81	4.46**
Factors Affect. Test Perform.	1214	59.63	9.53	289	58.72	9.97	1.46
Socio. Social Isolate Score	1081	94.17	4.88	194	93.84	4.91	0.87

** t significant at .01 level

* t significant at .05 level

What were the Head Start children's families like?

Most of the sample children came from low-income families with little education. The typical family had a total annual income of only around $4,000. Only about two-fifths of the mothers and the fathers on whom data could be collected, had completed a high-school education. About a tenth of the families had other children in Head Start at the same time as the sample children, and close to half had previously had children in Head Start. In interviews, almost all parents expressed initially favorable attitudes toward Head Start and toward education, but most parents also had moderately strong feelings of alienation from society, and only limited confidence in their power to change schools and other institutions for the better.

2. Characteristics of the Programs

What kinds of Head Start programs did the children attend? What education and/or training had the teachers received to prepare them for their work? How did they conduct their classes? What materials and equipment were available? Were there large enough variations among programs so that it would be reasonable even to suspect that those variations could have caused differences in the children's performance?

Most of the sample children were in classes with female teachers (96.48%) between 22 and 45 years of age. Nearly equal numbers of children had black teachers (44.78%) and white teachers (44.71%). While over 60% of the children had teachers with a bachelor's degree or higher in general education, only 3.19% had teachers with an advanced degree, and only 22.26% had teachers with a bachelor's degree or higher specifically in early childhood education. Fewer than half of the children had teachers who had any preparatory training specifically for Head Start; only a fourth (25.78%) had teachers with prior (non-Head Start) paid teaching experience with disadvantaged preschool children.

Taken as a group, then, the Head Start teachers had a moderately good general education background, but little education, training, or experience specifically in the type of work represented by the Head Start teaching assignment. There was, however, considerable variation among teachers on almost all of these dimensions. For example, although the typical teacher lacked a bachelor's degree in early childhood, about a fifth of the children had teachers who had taken graduate work in that field. Similarly, despite the generally low level of prior teaching experience, over 10% of the children had teachers with four years or more of paid experience with disadvantaged preschool children.

How did the teachers organize the classroom activities, and what program goals were given top priority?

The answers depend somewhat on the source of the data. One source was the self-report of the individual teacher. Although there was considerable variability among teachers in this regard, the typical teacher reported her class to be predominantly child-centered and oriented toward the children's mental health and positive self-image. At least half of the teachers named one of the child-centered themes as among their top three areas of concern. The traditional "whole child philosophy" was clearly a strong influence in Head Start teachers in 1968-69.

Few teachers considered their classes to be primarily task-centered. Almost a fourth of the children (24.58%) were in classes whose teachers reported no emphasis at all on a task-centered program, and the median value was only 6 on a scale of task-centeredness that ran from 0 to 35. This finding is important in view of Bissell's (1970) finding, based on three earlier studies, that structured programs (which tend to be task-centered) achieve higher child gains on cognitive measures than unstructured programs.

There was also little emphasis, according to teacher self-reports, on parent involvement. Over half of the children were in classes whose teachers reported no parent-participation activities. Other goals that, according to the teachers, received low to moderate emphasis were language development (median value around 20 on a scale of 0 to 240); child socialization (median of approximately 84 on a scale of 0 to 225); and child independence and self-care (median around 15 on a scale from 0 to 165).

As rated in structured observation forms by independent observers, the Head Start teachers varied substantially in their quality of cognitive input and their concern for the individual child, but the median values on both variables were near the center of the scales. Thus the data from the observations do not appear to substantiate the teachers' own reports about their program emphases and priorities, from which one might have expected much higher ratings on "Concern for Child" than on "Quality of Cognitive Input."

Further evidence on what activities were actually observed in the classrooms comes from the frequency distributions of 12 variables from the Observation of Substantive Curricular Interactions (OSCI). The most common types of activities, according to these data, were social activities involving direct physical contacts among children; use of language materials designed to teach verbal skills; and teachers' use of small-group instructional techniques. At the other end of the scale, there were virtually no observed occurrences of undesirable emotional behavior such as crying, fighting, screaming, or temper tantrums on the part of the children. At an intermediate level, in terms of frequency of occurrence, were activities such as unstructured teacher-child or child-child discussions; language learning by use of structured participatory lessons or by having the children watch and listen; use of programmed instructional materials; and painting.

Wide variability was observed in the physical resources of the individual Head Start centers and classes. Ratings of the classes' quantity and condition of cognitively oriented materials, large-muscle exercise equipment, and sensory-motor materials, all varied over most of the possible ranges on those scales. The median values in all cases were essentially at midpoint on the scales, indicating moderate overall availability of materials.

Anecdotal reports by classroom observers suggest that there were many important nuances of the classroom interactions and of the teachers' coping styles that may be inadequately represented in any of the common-core measures, despite efforts to select the best available instruments. These reports all emphasize the central role of the teacher in determining the children's development.

What many observers apparently found most critical, however, was not the teacher's overall approach, but her individual ability to implement that approach in a consistent, effective manner.

3. Gains Associated with Head Start Participation

Did the sample children and their parents make gains that can be associated with the children's participation in the 1968-69 Head Start programs?

For the children, at least, the answer is clearly "yes." Table 128 shows comparisons of pretest and posttest performance on each measure for all sample children having both pretest and posttest scores. The column at the far left lists the child and parent measures. Other columns, from left to right, show the sample sizes, the means of the pretest scores, the means of the posttest scores, the mean-gain scores, and the t-ratios of the gain scores. A double asterisk (**) after a t-ratio indicates that the gain (or loss) was significant at the .01 level.

The sample children made statistically significant gains on all cognitive measures. Stanford-Binet scores rose from 89.53 to 94.12, for a mean improvement of 4.59 IQ points. This gain is not large in comparison with the pretest standard deviation of 14.23, and still left the sample children, as a group, below the general population average of 100. The finding is consistent, however, with typical results from earlier studies of Head Start and other preschool programs. Beller (1969), for example, compared disadvantaged black children who attended a full-year Head Start program with a similar non-Head Start control group. Stanford-Binet performance of the Head Start group increased from 90 to 95, while scores of the control group did not change.

Similar results occurred on the Animal House subtest of the Wechsler Preschool and Primary Scale of Intelligence, and on the Caldwell-Soule Preschool Inventory. Animal House scores increased on the average from 8.49 to 9.21, a statistically significant gain which nevertheless failed to bring the Head Start graduates to the general-population average of 10. On the Caldwell-Soule, total age-normed

Table 128

PRETEST-POSTTEST PERFORMANCE CHANGES

Dependent Variable	N	Pretest Mean	Posttest Mean	Mean Change	t
Stanford-Binet	1466	89.53	94.12	4.59	17.78**
Caldwell-Soule PSI	1232	109.87	120.28	10.41	27.15**
Pers.-Soc. Response	1233	10.70	12.94	2.24	26.93**
Assoc. Vocabulary	1231	5.30	7.31	2.01	27.74**
Concept Activ.-Numer.	1229	6.03	7.73	1.70	23.00**
Concept Activ.-Sensory	1228	11.60	14.77	3.17	34.03**
Animal House	1183	8.49	9.21	0.72	8.70**
Birch Work Response	1272	90.34	90.67	0.33	1.35
Birch Verbal Response	1272	56.41	61.23	4.82	15.29**
Birch Spont. Response	1272	111.60	111.68	0.08	0.74
Factors Affecting Test Perform.	1503	59.45	66.31	6.86	25.32**
Socio. Social Isolate Score	1275	94.12	93.84	-0.28	1.81
Parent Attit. toward Head Start	876	194.85	195.74	0.89	1.19
Parent Attit. toward Educ.	879	125.42	142.11	16.69	15.49**
Parent Feeling of Power	879	123.60	122.82	-0.78	0.74
Parent Involvement in Commun.	887	9.40	9.34	-0.06	0.64
Parent Feeling of Alien.	881	16.64	16.76	0.12	1.02

**Difference significant at .01 level

scores increased from 109.87 to 120.28, for a 10.41 point gain. The larger magnitude of this gain, in comparison with the Stanford-Binet gain, suggests that the developers of the Caldwell-Soule were successful in creating a cognitive measure that would be sensitive to the beneficial effects of intervention programs such as Head Start.

In the social-emotional domain, statistically significant gains (.01 level) were made by the sample children on one of the three Birch measures: as rated by the examiners, the proportion of Stanford-Binet test items to which the children gave verbal responses increased from 56.41 to 61.23, for a gain of 4.82. This indicates an increase in the children's verbal fluency, and/or in their willingness to converse with the examiners, during the evaluation period

Stanford-Binet examiners also observed a significant (.01 level) improvement in the children's adaptiveness to the test conditions, as recorded in the Factors Affecting Test Performance instrument. At posttest time, the children showed less evidence of being distracted by the examiner, by noises or other environmental circumstances, and by the test itself, than they showed on the pretest.

No significant change was found in the proportion of social isolates, as defined by responses to the Sociometric instrument. That is, there was no statistical difference between pretest and posttest administration in the percentage of children who were chosen as playmates by one or more other children in the same class. This null finding may reflect, at least in part, the fact that the first administration ("pretest") was at mid-year rather than early in the year as with all other criterion measures. Thus the program's influence, if any, had only three or four months in which to act on the children.

Were there also changes in the parents?

The results here were mixed. There were no significant changes in the parents' attitudes toward Head Start, but this is not surprising since the great majority of parents were at or close to the top of the scale on initial administration of the Parent Interview. Parents retained their strong feelings of alienation from the rest of society, and of powerlessness to change their environment. One possible explanation is that many members of disadvantaged groups have learned that certain attitudes and points of view are expected of them, and the Head Start parents may have responded to the Parent Interviews according to those perceived expectations.

A significant gain did occur on one important parent measure: attitude toward education. At the end of the evaluation period, by comparison with their responses at the start of the Head Start year, the parents on the average placed greater emphasis on the importance and value of education as a steppingstone to personal happiness and to financial success. This finding is potentially of great practical significance, since parental attitudes about education may greatly influence the children's future educational development.

Perhaps as important as the means of the performance gains were the variations among children in the magnitude of those gains. Table 129, for example, shows the frequency distribution for Stanford-Binet IQ gains. Although the average gain was 4.59 IQ points, 9.2% of the children gained 18 points or better, while a similar number lost 12 points or more. There were similar patterns of variations on most other peformance measures. The major function of the remainder of the analyses was to determine how much of the variation might be accounted for by (1) characteristics of the children themselves, (2) features of the programs that they attended, and/or (3) interactions between child characteristics and program features.

Table 129

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON STANFORD-BINET

VALUES	FREQUENCY	PERCENTAGE
Above 47.9	2	0.1
43.0-47.9	2	0.1
38.0-42.9	3	0.2
33.0-37.9	1	0.1
28.0-32.9	7	0.5
23.0-27.9	33	2.3
18.0-22.9	86	5.9
13.0-17.9	157	10.7
8.0-12.9	237	16.2
3.0- 7.9	312	21.3
(-2.0)- 2.9	299	20.4
(-7.0)-(-2.1)	187	12.7
(-12.0)-(-7.1)	87	5.9
(-17.0)-(-12.1)	37	2.5
(-22.0)-(-17.1)	7	0.5
(-27.0)-(-22.1)	3	0.2
(-32.0)-(-27.1)	3	0.2
(-37.0)-(-32.1)	3	0.2

N = 1466

4. Differences in Gains for Different Groups of Children

Did certain definable groups of children make larger gains than others in Head Start?

Six child-description variables were used to define subgroups of children, so that comparisons of gains could be made for the subgroups. The variables were (1) child's age, (2) child's sex, (3) child's initial (pretest) IQ, (4) urban vs. non-urban residence, (5) Southern vs. non-Southern residence, and (6) mother's educational level (as an indicator of socio-economic status).

Four of the subgrouping variables, age, sex, mother's educational level, and Southern/non-Southern residency, showed very little relationship to the amount of performance gain. Though there were differences between the gains of Southern and non-Southern children on a few performance measures, these differences were scattered and inconsistent in direction.

The children's pretest IQs were significantly related to their gains on a number of cognitive and social-emotional measures, as shown in Table 130. On the Stanford-Binet, for example, the Low initial IQ group (IQ below 85) gained significantly more than the Mid IQ group (IQ of 85 to 95), which in turn gained more than the High IQ group (IQ above 95); all of these differences were significant at the .01 level. Furthermore, the absolute magnitude of the differences was impressive. The Low initial IQ children gained, on the average, almost nine IQ points more than the High IQ children; this was approximately twice the overall average pre-post gain for the total sample.

Similar, though less pronounced differences in gains were shown on the Caldwell-Soule. Again, the Low initial IQ group, which also had the lowest initial Caldwell-Soule scores, gained significantly more than the Mid IQ group, which in turn gained more than the High IQ group.

Table 130

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH CHILD'S PRETEST IQ

	Low IQ (Below 85)				Mid IQ (85-95)				High IQ (Over 95)						
Dependent Variable	N	Pre Mean	Post Mean	Mean Gain	N	Pre Mean	Post Mean	Mean Gain	N	Pre Mean	Post Mean	Mean Gain	Diff.in Gain Low-Mid IQ	Diff.in Gain Low-High IQ	Diff.in Gain Mid-High IQ
Stanford-Binet	512	74.29	83.21	8.92	436	89.99	94.79	4.80	518	104.23	104.35	0.12	4.12**	8.80**	4.68**
Caldwell-Soule PSI	407	97.96	110.55	12.59	343	110.66	121.18	10.52	428	120.57	128.92	8.35	2.07*	4.24**	2.17*
Pers.-Soc. Resp.	407	9.24	11.96	2.72	343	10.86	13.06	2.20	428	12.00	13.82	1.83	0.52*	0.89**	0.37
Assoc. Vocabulary	405	4.20	6.24	2.04	343	5.23	7.47	2.24	428	6.44	8.26	1.82	-0.20	0.22	0.42*
Concept Activ.-Numer.	405	5.06	6.90	1.84	342	6.19	7.81	1.62	428	6.79	8.42	1.63	-0.22	0.21	-0.01
Concept Activ.-Sensory	403	10.05	13.90	3.85	342	11.80	14.90	3.10	429	12.87	15.45	2.58	0.75**	1.27**	0.52*
Animal House	396	7.21	7.85	0.64	332	8.52	9.50	0.98	404	9.68	10.28	0.60	-0.34	0.04	0.38
Birch Work Response	418	89.32	90.54	1.22	367	90.02	90.55	0.53	467	91.38	90.86	-0.52	0.69	1.74**	1.06
Birch Verbal Response	418	53.49	59.01	5.52	367	56.54	62.69	6.15	467	58.76	62.00	3.24	-0.63	2.28**	2.91**
Birch Spont. Response	418	111.13	111.44	0.31	367	111.52	111.88	0.36	467	111.98	111.65	-0.33	-0.05	0.64**	0.69**
Factors Affect. Test Perform.	528	56.45	64.43	7.98	439	60.46	66.51	6.05	521	62.02	68.31	6.29	1.93**	1.69**	-0.24
Socio. Social Isolate Score	420	94.75	94.52	-0.23	369	93.82	93.57	-0.25	434	93.79	93.53	-0.26	0.02	0.03	0.01

** Difference significant at .01 level

* Difference significant at .05 level

Roughly the same pattern appears on the Birch scores and on the Factors Affecting Test Performance. On all three Birch scores, the Low initial IQ group gained significantly more than the High IQ group, and on two of the scores (Verbal Response and Spontaneous Response) the Mid IQ group gained more than the High IQ group. On the Factors Affecting Test Performance, the Low initial IQ group gained more than either the Mid or the High group.

It appears that the less able children reliably benefited more than the children of initially greater ability. The consistency of the pattern across virtually all of the dependent variables argues that regression-toward-the-mean effects alone cannot explain these differences in gains for the Low, Mid, and High initial IQ groups.

The other subsetting variable that was related to performance gains on a sizeable number of measures was the children's Urban/Non-Urban residency. (Children living in cities with populations of 50,000 or greater were categorized as Urban; Non-Urban children were those living in smaller cities, in suburbs, or in rural communities.) Table 131 shows significant differences in the gains of Urban and Non-Urban children on nine variables, including both cognitive and social-emotional measures. With one exception (Birch Spontaneous Response Score), all of the differences were in favor of the Non-Urban group. This finding may reflect the initial performance levels of the non-urban children at least as much as it relates to urbanicity *per se*, or to possible differences in the quality of urban and non-urban programs. On seven of the nine dependent variables for which urban and non-urban children had significant differences in gains, the group which had the lowest initial scores made the largest wins. For these variables, the differences in gains suggest that Head Start was more beneficial to children of low ability.

Table 131

DIFFERENCES IN CHILD GAINS ASSOCIATED WITH URBAN/NON-URBAN RESIDENCE

DEPENDENT VARIABLE	URBAN				NON-URBAN				DIFF. IN GAIN[1]
	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	N	PRETEST MEAN	POSTTEST MEAN	MEAN GAIN	
Stanford-Binet	1176	90.92	94.79	3.87	290	83.93	91.41	7.48	3.61**
Caldwell-Soule PSI	970	110.84	120.24	9.39	262	106.27	120.45	14.18	4.79**
Pers. Soc. Resp.	970	10.72	12.81	2.09	263	10.63	13.41	2.78	0.69**
Assoc Vocabulary	968	5.40	7.32	1.93	263	4.96	7.29	2.33	0.40*
Concept Activ.-Numer.	965	6.08	7.61	1.53	264	5.84	8.16	2.31	0.78**
Concept Activ.-Sensory	965	11.67	14.51	2.84	263	11.36	15.73	4.38	1.54**
Animal House	933	8.72	9.38	0.65	250	7.62	8.58	0.95	0.30
Birch Work Response	970	89.92	90.50	0.58	302	91.65	91.21	-0.45	-1.03
Birch Verbal Response	970	55.76	59.46	3.70	302	58.55	66.94	8.40	4.70**
Birch Spont. Response	970	111.52	111.78	0.26	302	111.85	111.33	-0.52	-0.78**
Factors Affect. Test Perform.	1186	59.44	65.65	6.21	317	59.53	68.80	9.27	3.06**
Socio. Social Isolate Score	947	94.10	93.96	-0.14	328	94.16	93.47	-0.70	-0.56

**Difference significant at .01 level

*Difference significant at .05 level

[1] Sign of difference is positive when value for Non-Urban group is larger.

5. Differences in Gains with Different Program Approaches

Did children make larger performance gains in certain kinds of programs than in other kinds? A series of one-way analyses of variance was performed on several program variables to determine whether there were significant differences in performance for different program characteristics and approaches. Instead of using "raw" pre-post difference scores as the measure of gain, the posttest scores on each measure were adjusted by regression techniques for differences in pretest scores. This provided "residualized" performance measures that took into account the fact that some children started with higher scores than other children. Before the analyses of variance could be performed, however, it was necessary to selected a manageable number of program variables from the very large quantities of program-description data that were available. To do this, a method of correlational analysis was used as a preliminary screening technique. Correlations were first computed between each of approximately 80 program-description variables, and the pretest scores on each performance measure; then correlations were computed with the posttest scores on each performance measure. The difference between the pretest correlation and the posttest correlation for each combination of program variable and performance measure was tested for statistical significance. Where there was a significant increase in correlation (i.e., where the posttest correlation was significantly larger than the pretest correlation), this was interpreted as strongly suggestive that the program variable in question had affected the children's gains on the particular performance measure.

From the correlational analyses, a number of apparently influential program variables were identified. To these were added several other variables that did not appear so potent in the correlational analyses, but that were of particular theoretical or practical interest. The result was that 10 program variables were selected for further study by analysis of variance. Each of these variables is described below, and the results of the analysis of variance for that variable are discussed. The variables are listed roughly in order of the strength of their relationships to the dependent variables.

Teacher's Use of Physical Control. Is physical discipline an effective means of controlling Head Start children to promote their cognitive and social-emotional development? To what extent are the parents' attitudes associated with the teacher's mode of control? This program variable was used to define three groups: a High group consisting of children whose teachers indicated that they used no physical control at all; a Mid group whose teachers reported using "Dirty looks," "Scolding," or "Taking away privileges;" and a Low group whose teachers used "Mild physical" control. (No teachers reported using severe physical control.)

Table 132 shows the results of the analysis of variance for Teacher's Use of Physical Control. The columns in the table contain, from left to right, the names of the dependent variables; the means and standard deviations of each dependent variable of the children in the Low group on "Teacher's Use of Physical Control;" the means and standard deviations for children in the Mid and High groups; the total number of degrees of freedom in the analysis of variance; and the resulting F-ratio. F-ratios are marked with a double asterisk if they are significant at the .01 level, and a single asterisk if they reach the .05 level of significance.

Table 132 shows significant relationships (.01 level) between mode of control and children's performance on the Stanford-Binet and on most of the Caldwell-Soule scores; scores were consistently highest for children whose teachers reportedly used no physical control at all. This finding has definite implications for the training, and perhaps even the selection, of future Head Start teachers. Because of the lack of no-Head Start control groups, direct cause-and-effect relationships cannot be conclusively demonstrated; furthermore, it is possible that teachers who used physical control also had certain other traits that were the real determiners of their classes' poorer performance. Nevertheless, it appears that future Head Start programs might profitably place heavy training emphasis on teachers' avoidance of the use of physical control of any type.

Table 132

RESULTS OF ANALYSES OF VARIANCE ON
TEACHER'S USE OF PHYSICAL CONTROL

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	91.27	9.11	91.34	7.85	93.39	8.69	1162	7.66**
Caldwell-Soule PSI	117.25	11.08	117.10	14.55	120.69	10.73	979	10.28**
Pers.-Soc. Response	12.74	2.57	12.59	2.75	13.25	2.30	980	6.75**
Assoc. Vocabulary	7.24	2.16	7.21	2.43	7.57	2.09	978	2.82
Concept Activ.-Numer.	8.04	2.39	7.27	2.51	8.09	2.31	977	8.82**
Concept Activ.-Sensory	14.85	2.48	14.18	3.06	15.10	2.49	976	8.85**

M_1 = Mean for low level on program variable
(i.e., physical control)

M_2 = Mean for mid level

M_3 = Mean for high level
(non-physical control)

** F significant at .01 level

Indirect corroboration of the findings on "Teacher's Method of Control" may be inferred from a study by Prather (cited by Grotberg, 1969), who compared the effectiveness of "abstract" and "concrete" teachers. These two sets of teachers were defined as differing along a number of dimensions, one of which was their degree of punitiveness. Prather found that pupils of "abstract" teachers, who were less punitive, made larger gains in achievement than those of punitive "concrete" teachers.

Emphasis on Child Independence and Self-Care. Although most teachers reported a low emphasis on fostering the children's independence and self-care (the median value was only 15 on a derived scale of 0 to 165), several classes had values in the upper half of this scale, and the correlational analysis indicated strong relationships between this variable and several performance measures. To examine these relationships more intensively, three groups were defined for the analysis of variance: a Low group with computed scale values below 5; a Mid group with values between 5 and 33; and a High group with values over 33.

The results, summarized in Table 133, indicate that reported program emphasis on independence and self-care was significantly related to a number of measures of children's cognitive and affective behavior. In general, this type of program emphasis was associated with higher levels of cognitive performance (.01 level), as measured by the Stanford-Binet and Caldwell-Soule tests. This finding seems consistent with a report by Prather (cited by Grotberg, 1969) that pupils of "abstract" teachers made higher achievement gains than children of "concrete" teachers. One of the distinguishing features of the "abstract" teachers is that they were more encouraging of independence and individual responsibility on the part of the children.

Somewhat different results were found on two affective or adjustment variables. The High group was lowest on ratings of Birch Verbal Responses and was lower than the Mid group on the FATP measure of child's adjustment to test conditions. One possible interpretation of these findings is that "emphasis on independence

Table 133

RESULTS OF ANALYSES OF VARIANCE ON
EMPHASIS ON INDEPENDENCE AND SELF-CARE

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	94.60	8.78	93.91	8.78	95.63	8.74	1440	4.74**
Caldwell-Soule PSI	119.73	11.42	121.93	11.05	122.26	12.70	1213	5.58**
Pers.-Soc. Response	12.86	2.44	13.21	2.43	13.22	2.50	1214	2.84
Assoc. Vocabulary	7.01	2.10	7.50	2.07	7.55	2.37	1212	7.38**
Concept Activ.-Numer.	7.59	2.35	8.12	2.46	7.74	2.39	1210	5.32**
Concept Activ.-Sensory	14.61	2.80	15.03	2.63	15.08	2.60	1209	3.61*
Birch Work Response	90.32	6.70	90.39	6.88	90.55	6.67	1252	1.10
Birch Verbal Response	61.58	8.97	61.93	9.70	60.32	9.92	1252	3.32*
Birch Spont. Response	111.76	3.04	111.74	2.98	111.74	3.23	1252	0.01
Factors Affecting Test Perform.	65.27	8.33	66.99	7.10	66.28	7.44	1477	6.30**

M_1 = Mean for low emphasis on program variable

M_2 = Mean for mid emphasis

M_3 = Mean for high emphasis

** F significant at .01 level

* F significant at .05 level

and self-care" focuses attention on each child's independent performance, but does not stress verbal interactions with other persons (e.g., the Stanford-Binet examiner).

The overall results suggest that the program approach should be tailored to specific objectives. Perhaps teachers should learn to stress an approach such as "Emphasis on Independence and Self-Care" for certain portions of the classroom periods, but then at other times should stress more interactive and cooperative activities to promote goals such as oral fluency and adaptiveness to social situations.

Large-Muscle Equipment. Although there would seem to be no logical connection between the amount and condition of large-muscle equipment in classrooms and the children's cognitive performance, such relationships were strongly suggested by the correlational analyses. To study these possible associations in greater depth, analyses of variance were performed with the data divided into two groups: a Low group consisting of children in classes with scaled values below 13.0 (on a scale ranging from 0 to 20), and a High group for which the rating was 13.0 or above.

The results of the analyses generally confirm the findings of the correlational analyses, and indicate that children in classes with more and better large-muscle equipment gained more in cognitive abilities. Table 134 shows that higher classroom ratings on cognitive materials were associated with significantly higher performance on the Stanford-Binet, on the total Caldwell-Soule, and on two of the Caldwell-Soule subscores. No relationships were found with any affective measures.

One possible explanation for the strong positive relationship between large-muscle equipment and cognitive performance is that this variable reflects the overall affluence of the different centers and classes. According to this rationale, a center with better large-muscle equipment is also one with better facilities and equipment in general, with a better staff. One piece of evidence argues

Table 134

RESULTS OF ANALYSES OF VARIANCE ON

LARGE-MUSCLE EQUIPMENT

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	94.44	8.73	95.84	9.15	1151	7.01**
Caldwell-Soule PSI	119.49	11.40	121.33	11.10	978	6.56**
Pers.-Soc. Resp.	12.65	2.37	12.99	2.42	979	4.83*
Assoc. Vocabulary	7.12	2.16	7.55	2.23	977	9.35**
Concept Activ.-Numer.	7.75	2.31	7.40	2.28	974	5.69*
Concept Activ.-Sensory	14.84	2.70	15.02	2.75	973	1.08
Birch Work Response	90.47	6.60	91.13	6.52	1018	2.56
Birch Verbal Response	62.78	9.50	62.36	9.12	1018	0.52
Birch Spont. Response	111.62	3.10	111.35	3.08	1018	1.83
Factors Affecting Test Perform.	66.44	7.94	67.24	7.22	1186	3.28

M_1 = Mean for low level on program variable

M_2 = Mean for high level

** F significant at .01 level

* F significant at .05 level

against this explanation, however. That is that another variable, which was a general composite score summarizing ratings of many different types of equipment and facilities, showed no such strong relationships with dependent variables in the correlational analyses. Thus it would appear that the large-muscle equipment variable is not just an indicator of the general quality of the centers.

An alternative explanation is that the large-muscle equipment actually serves some important function in helping the children to develop generally, in improving their overall mental as well as physical health. Some support for this conjecture may lie in the fact that in the correlational analyses another variable, which measured size and quality of outdoor play areas, was also positively related to scores on the Caldwell-Soule cognitive test and to achievement motivation.

Program Emphasis on Child Socialization. Was a high degree of program emphasis on children's socialization behavior associated with greater oral fluency and adaptiveness to socially interactive situations? The scale on this derived program variable ranged from 0 to 225, and the median value was around 84. An analysis of variance was performed with the children divided into three groups: a Low group, whose classes placed little emphasis on child socialization activities (scale value below 60); a Mid group (value between 60 and 111); and a High group (above 111) whose classes placed heavy emphasis on socialization.

As shown in Table 135, socialization was related to the Caldwell-Soule (.05 level), but not to the Stanford-Binet or Animal House. On the total Caldwell-Soule and on two of its subscores (Associative Vocabulary and Sensory), a Middle level of emphasis on child socialization was superior to either a High level or a Low level. The strongest relationship, however, was in the social-emotional domain. The greater the emphasis on socialization, the better the child's adjustment to the (Stanford-Binet) test conditions (.01 level of significance). Children in the High socialization group also gave more Birch Verbal Responses (.05 level). This finding suggests that socialization

Table 135

RESULTS OF ANALYSES OF VARIANCE ON EMPHASIS ON CHILD SOCIALIZATION

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	94.54	8.72	94.80	9.32	95.07	8.37	1440	0.44
Caldwell-Soule PSI	121.24	13.18	123.29	11.45	121.89	10.62	1213	3.06*
Pers.-Soc. Response	13.05	2.63	13.20	2.44	13.25	2.34	1214	0.73
Assoc. Vocabulary	7.27	2.27	7.64	2.21	7.30	2.07	1212	3.49*
Concept Activ.-Numer.	7.56	2.58	7.98	2.39	7.81	2.29	1210	2.95
Concept Activ.-Sensory	14.66	2.82	15.16	2.60	14.85	2.61	1209	3.52*
Animal House	9.31	2.47	9.37	2.48	9.45	2.46	1165	0.32
Birch Work Response	90.18	6.93	90.63	6.29	90.41	6.72	1252	0.47
Birch Verbal Response	60.37	10.22	60.91	9.00	61.98	9.19	1252	3.19*
Birch Spont. Response	112.03	2.91	111.64	3.11	112.13	3.19	1252	2.98
Factors Affecting Test Perform.	65.86	7.51	66.06	8.45	67.23	7.05	1477	4.81**

M_1 = Mean for low emphasis on program variable

M_2 = Mean for mid emphasis

M_3 = Mean for high emphasis

** F significant at .01 level

* F significant at .05 level

activities, which included encouragement of verbal interactions among children, and between children and adults, had a positive impact on the children's verbal fluency and on their ability to adapt to new interactive situations such as those in the administration of the Stanford-Binet test.

These results seem to reinforce the conclusion drawn from the analyses on Independence and Self-Care, i.e., that program approach should depend on specific goals. Emphasis on independence and self-care was associated with benefits in the cognitive domain, but at the expense of certain types of social-emotional development; by contrast, emphasis on socialization was associated with greater growth in the social-emotional area, but not consistently related to cognitive development. Thus, the two types of program approaches appear complementary. Perhaps the Head Start class periods should incorporate careful planning to include both approaches for at least some parts of every day.

Level of Teacher's General Education Preparation. Did children with highly educated teachers learn more? To test this, the data were organized to divide the sample into two groups: A Low group consisting of children having teachers with less than a B.S. or B.A. degree, and a High group with teachers having the bachelor's degree or higher.

Table 136 shows that the level of teacher's general education was not significantly related to adjusted posttest Stanford-Binet IQ, but it had a significant (.01 level) negative relationship with adjusted posttest Caldwell-Soule total scores and with three of the Caldwell-Soule subscores. Similar results were found on adjusted posttest scores related to the children's ability to adapt to test conditions (FATP), and to their observed work-type responses and verbal responses to the Binet items. In all these cases, adjusted prescores were lower for children having teachers with a higher education level. No parent measures were included in the dependent variables for this analysis, because the correlational analysis had indicated that there were probably no strong relationships with teacher education.

Table 136

RESULTS OF ANALYSES OF VARIANCE ON LEVEL OF TEACHER'S GENERAL EDUCATION PREPARATION

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	91.28	9.03	91.64	8.58	1161	0.45
Caldwell-Soule PSI	120.93	10.95	118.36	10.78	974	12.77**
Pers.-Soc. Resp.	13.45	2.46	12.85	2.27	975	15.09**
Assoc. Vocabulary	7.43	2.10	7.16	2.13	974	3.76
Concept Activ.-Numer.	8.03	2.23	7.55	2.38	975	9.97**
Concept Activ.-Sensory	15.75	2.46	14.49	2.55	974	56.60**
Birch Work Response	91.70	6.39	90.63	6.64	1021	6.10*
Birch Verbal Response	65.91	9.45	60.54	8.98	1021	78.68**
Birch Spont. Response	111.89	2.98	111.78	3.12	1021	0.28
Factors Affecting Test Perform.	68.01	6.21	66.08	8.14	1196	19.10**

M_1 = Mean for low level on program variable

M_2 = Mean for high level

** F significant at .01 level

* F significant at .05 level

One possible explanation of these findings was that they were artifacts resulting from confounding of Teacher's General Education Preparation with geographic region. Most of the less-educated teachers were in Head Start classes in the South; the South also had, in general, the more highly structured programs. There is good evidence from earlier studies that structured programs usually produce better performance, at least on cognitive measures; thus the higher gains found in the present study for children in the Low group on Teacher's Education Preparation might simply reflect the greater structure of the programs for those children.

To examine the relationships of Teacher's General Education Preparation without contamination by other program factors associated with geographic region, t-test comparisons of performance for two levels of the variable were made independently for Southern and non-Southern children.

The results of the comparisons are summarized in Table 137. The top part of the table shows the data for Southern children only, and the bottom part for non-Southern children only. The right-hand column of the table shows the t-score for the difference in means for the two groups. A double asterisk (**) indicates a .01 level of significance, and a single asterisk (*) designates a .05 level (based on a two-tailed test).

In general the division of children into Southern and non-Southern groups did not eliminate the relationships found for the total sample. Thus it appears that those relationships were not simply artifacts of the South/non-South confounding.

Teacher's Paid Experience with Disadvantaged Young

Another question of direct operational relevance to Head Start concerns the relationship between the teacher's prior teaching experience and the gains of the children and their parents. The split on this variable divides the sample children into a None group, whose teachers had no paid experience with disadvantaged preschoolers prior to the evaluation period, and a Some group, whose teachers had prior experience.

Table 137

COMPARISON OF MEAN SCORES FOR TWO LEVELS

OF TEACHER'S GENERAL EDUCATION PREPARATION

DEPENDENT VARIABLE	SOUTHERN CHILDREN						
	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Caldwell Soule PSI	221	120.94	9.60	117	117.81	9.46	2.87**
Pers.-Soc. Resp.	221	13.78	2.22	117	13.07	1.93	3.07**
Concept Activ.-Numer.	221	8.39	2.05	117	8.34	2.16	0.19
Concept Activ.-Sensory	221	16.21	2.10	117	15.42	2.08	3.46**
Birch Work Response	195	91.32	6.26	135	91.46	5.91	0.23
Birch Verbal Response	195	68.74	8.79	135	63.07	9.32	5.62**
Factors Affect. Test Perf.	277	68.86	5.68	152	62.60	10.59	3.52**

DEPENDENT VARIABLE	NON-SOUTHERN CHILDREN						
	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Caldwell Soule PSI	145	120.91	12.78	492	118.50	11.08	2.41**
Pers.-Soc. Resp.	146	12.96	2.71	492	12.80	2.34	0.66
Concept Activ.-Numer.	146	7.50	2.37	492	7.37	2.39	0.61
Concept Activ.-Sensory	145	15.04	2.79	492	14.27	2.61	2.96**
Birch Work Response	144	92.14	6.56	546	90.42	6.80	2.26*
Birch Verbal Response	144	62.09	9.05	546	59.91	8.78	2.63**
Factors Affect. Test Perf.	188	66.76	6.74	580	66.99	7.11	0.40

M_1 = Mean for low value on program variable

M_2 = Mean for high value

** t significant at .01 level

* t significant at .05 level

As shown in Table 138, children having teachers with "prior paid experience" obtained lower adjusted postscores (.01 level) on the Caldwell-Soule (total, Personal-Social Responsiveness Subscore, and Sensory Subscore) than those having teachers without such prior experience. There was no relationship with any child affective measure, but parents of children having teachers with prior paid experience showed less positive feelings of personal power (.01 level).

As with Teacher's General Education Preparation, the findings on Teacher's Paid Experience with Disadvantaged Young were subject to suspicion, because of probable confounding of the variable with geographic region. The less-experienced teachers, to a large extent, were in the South, which also had the more highly structured programs. Again, therefore, separate analyses were performed for Southern and non-Southern children; the separation of the children by geographic region weakened but did not eliminate the relationships found for the total sample (see Table 139).

The present findings may be compared with those of Stanford Research Institute (1971) in their Study of Planned Variation in Head Start during 1969-70. In that study, teachers were categorized as High, Medium, or Low on a scale which combined both general academic background and teaching experience. Thus the scale can be grossly related to a combination of the two teacher preparation variables used here, although in the SRI study all teaching experience was counted, whereas Teacher's Paid Experience with Disadvantaged Young includes only experience with disadvantaged preschoolers.

Teachers categorized as High in the SRI study had a B.A. and at least two years' teaching experience; those in the Medium category had the B.A. degree or two years' experience; and teachers categorized as Low had neither the degree nor prior experience.

Table 135

RESULTS OF ANALYSES OF VARIANCE ON

TEACHER'S PAID EXPERIENCE WITH DISADVANTAGED YOUNG

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	94.12	8.53	93.61	9.20	1161	0.74
Caldwell-Soule PSI	120.30	10.62	117.74	11.43	974	10.23**
Pers.-Soc. Resp.	13.02	2.34	12.48	2.39	975	9.86**
Assoc. Vocabulary	7.29	2.06	7.23	2.28	974	0.14
Concept Activ.-Numer.	7.75	2.27	7.42	2.49	975	3.59
Concept Activ.-Sensory	14.95	2.56	14.22	2.52	974	14.85**
Factors Affecting Test Perform.	67.07	7.54	66.11	7.29	1196	3.67
Parent Feeling of Power	124.39	26.21	116.42	24.37	687	11.40**
Parent Feeling of Alien.	16.97	3.35	16.42	3.09	689	3.37

M_1 = Mean for low level on program variable

M_2 = Mean for high level

** F significant at .01 level

Table 139

COMPARISON OF MEAN SCORES FOR TWO LEVELS
OF TEACHER'S PAID EXPERIENCE WITH DISADVANTAGED YOUNG

DEPENDENT VARIABLE	SOUTHERN CHILDREN						
	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Caldwell-Soule PSI	284	120.10	9.77	54	118.62	8.98	1.08
Pers.-Soc. Resp.	284	13.51	2.19	54	13.63	1.97	0.42
Concept Activ.-Sensory	285	15.96	2.14	53	15.77	2.02	0.64
Parent Feeling of Power	159	126.66	23.69	40	113.90	25.82	2.81**

DEPENDENT VARIABLE	NON-SOUTHERN CHILDREN						
	N_1	M_1	SD_1	N_2	M_2	SD_2	t
Caldwell-Soule PSI	445	119.84	11.15	192	117.19	12.18	2.57*
Pers.-Soc. Resp.	446	13.03	2.41	192	12.38	2.40	3.15**
Concept Activ.-Sensory	445	14.61	2.68	192	14.08	2.60	2.33*
Parent Feeling of Power	375	124.01	27.34	114	118.06	23.56	2.26*

M_1 = Mean for low value on program variable

M_2 = Mean for high value

** t significant at .01 level

* t significant at .05 level

SRI found a negative relationship in sponsored programs between level of teacher education and experience, and children's gains on a general cognitive measure which combined the Stanford-Binet IQ and the Preschool Inventory score. However, for unsponsored programs the relationship was exactly reversed; children of teachers with higher levels of education and experience made lower gains. Thus SRI's results were somewhat equivocal, and appear neither to support nor to contradict the findings of the present study.

At least two explanations for the present study's findings are possible. One may speculate, for example, that what the more highly educated teachers learned in college and in graduate school was somehow antithetical to the skills and/or attitudes needed for effective interaction with disadvantaged young children. Perhaps, for example, they learned to work at such an abstract level that they had trouble communicating with the Head Start children. A closely related possibility is that teachers with high education levels tend to come from backgrounds that given them a more middle-class orientation. These teachers might find it difficult to recognize special needs of young disadvantaged children, and the children, in turn, might view the teachers as having little in common with them; either way, effective communication and empathy could be seriously impaired.

A possible explanation for the finding on Teacher's Paid Experience with Disadvantaged Young is that the teachers who had already had a paying job in working with disadvantaged pre-schoolers were more middle-class in background and orientation; in this case, the rationale already given for Teacher's General Education Preparation would also apply here.

Finally, there is a very real possibility that the apparent associations of the teacher's education and experience with children's gains are statistical artifacts resulting from concommitant variations of these variables with other program features that were the true sources of the relationships with performance. Although an attempt was made to eliminate the effects of georgraphic region, many other possible sources of confounding were not investigated. Perhaps the strongest statement that should be made at this point is that consideration should be given to teacher-hiring criteria that place as much emphasis on specific attitudes and skills related to the teaching of young poverty children, as to general academic or experiential credentials. The identification of the important skills and attitudes is a far from trivial task, but perhaps the present study can be useful in pointing out possibie leads (e.g., the avoidance by teachers of physical punishment).

Emphasis on Language Program

This variable was of interest both because prior research has indicated that a language emphasis may promote cognitive development, and because of significant relationships found in the correlational analysis between this variable and several performance measures. For the analysis of variance, the children were divided into a Low group with scores of 11 or less (on a scale of 0 to 300) and High group with scores of 60 or higher. There were no cases between 11 and 60.

Table 140 shows conflicting results on the cognitive measures, with greater language emphasis positively associated with three of the Caldwell-Soule subscores (.01 level), but negatively related to Stanford-Binet IQ (.01 level). Somewhat surprising is the lack of evidence that greater language emphasis was positively related to any of the performance measures that might logically be associated most closely with language skills (e.g., Stanford-Binet, Associative Vocabulary Subscores of the Caldwell-Soule, and Birch Verbal Response Score). At the same time, however, a High degree of emphasis on language activities was associated with larger Birch Spontaneous Responses, which might be interpreted as indicative of a form of verbal fluency.

The findings associated with the teacher's self-reports of language emphasis may stem at least in part from the relatively small number of teachers with high values on this variable. Over half of the children were in classes whose teachers placed virtually no emphasis at all on language-related activities (i.e., they had values between 1 and 20 on a scale of 1 to 240). Even in those classrooms that did provide such instruction, the common procedure involved only brief sessions approximately every other day. Perhaps this was not a

Table 140

RESULTS OF ANALYSES OF VARIANCE ON EMPHASIS ON LANGUAGE PROGRAMS

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	95.83	9.25	94.28	8.26	1235	9.64**
Caldwell-Soule PSI	119.43	11.10	119.71	12.25	1028	0.14
Pers.-Soc. Response	12.51	2.38	12.92	2.45	1029	7.42**
Assoc. Vocabulary	7.24	2.19	7.04	2.18	1027	2.23
Concept Activ.-Numer.	7.21	2.39	7.73	2.33	1026	12.76**
Concept Activ.-Sensory	13.94	2.63	14.80	2.60	1025	28.06**
Birch Work Response	91.08	6.51	90.25	6.83	1090	4.24*
Birch Verbal Response	60.82	8.72	61.87	10.63	1090	3.15
Birch Spont. Response	111.20	3.06	111.93	3.28	1090	14.19**
Factors Affecting Test Perform.	66.92	6.74	66.54	8.18	1269	0.85
Parent Feeling of Power	121.80	27.34	123.90	24.60	738	1.20

M_1 = Mean for low emphasis on program variable

M_2 = Mean for high emphasis

** F significant at .01 level

* F significant at .05 level

sufficiently intensive exposure for the children to gain significant benefits. Certainly there is substantial evidence from prior research that intensive language-oriented programs can be effective in enhancing cognitive growth. A good example is the study by Herman and Adkins (1970), comparing a structured language program against a more general enrichment program that did not focus on language instruction. In that study, the language program was found superior in terms of the Head Start children's performance on both the Stanford-Binet and the Caldwell-Soule Preschool Inventory. Children receiving the language program also make significant gains on the Animal House test, whereas those receiving the general enrichment program did not. Probably the Hawaii language program was much more concentrated and structured than the language activities reported by most teachers in the present study, and this may well account for differences in findings.

In another study that appears relevant to present findings on the language-emphasis variable, Edwards and Stern (1969) reported significant superiority on the Caldwell-Soule Preschool Inventory for Mexican-American and Negro Head Start children who received daily language-lesson sequences, over similar children who participated in song-and-games sessions.

Teacher's Quality of Cognitive Input

Values on this variable were based on independent observers' ratings of how frequently the teachers engaged in activities presumed to foster cognitive growth. In the analyses of variance, the split on the variable divided the sample children into three groups according to whether their teachers had Low, Middle, or High Quality of Cognitive Input.

As Table 141 shows, Teacher's Quality of Cognitive Input was not related to performance on either the Stanford-Binet or the Caldwell-Soule. These results seems to con-

Table 1-1

RESULTS OF ANALYSES OF VARIANCE ON

TEACHER'S QUALITY OF COGNITIVE INPUT

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	95.37	8.37	95.80	9.12	94.98	8.95	1446	1.10
Caldwell-Soule PSI	118.39	11.67	120.18	11.27	120.08	12.35	1214	2.86
Factors Affecting Test Perform.	66.64	6.97	66.27	7.61	66.24	8.26	1483	0.40
Parent Feeling of Alien.	16.34	3.26	16.41	3.20	17.16	3.27	872	5.85**

M_1 = Mean for low level on program variable

M_2 = Mean for mid level

M_3 = Mean for high level

** F significant at .01 level

tradict those of several other studies which have found superior cognitive growth in programs having a cognitive orientation. For example, in their study of New York State prekindergarten programs, Di Lorenzo, Salter, and Brady (1969) found larger cognitive gains in cognitively-oriented programs than in nursery or early childhood oriented programs. Similarly, the Stanford Research Institute (1971), in its Study of Planned Variations in Head Start, found that children of teachers rated by observers as cognitively oriented made larger gains on the general cognition variable (combination of Stanford-Binet and Preschool Inventory).

Most of the teacher behavior variables showing significant relationships with performance in the present study were derived not from actual observations but from teachers' reports of what they did, what they emphasized, etc. It is quite possible that such reports may reflect what the teachers felt was expected of them, or their interpretation of overall program goals, more than they reflect what those teachers actually did in the classroom.

Cognitive Learning Materials

Was performance better in classes with more cognitive-oriented materials?

Values on the derived scale for this variable (possible range of 0 to 38) were divided into three groups: a Low group in which the scaled values representing quantity and condition of cognitive materials were under 15; a Mid group with values between 15 and 22; and a High group with values of 23 and above.

As Table 142 shows, there was a clear and systematic relationship between cognitive learning materials and Birch Work Response Scores. In classes with better access to cognitively oriented materials and aids, the children gave a significantly larger (.01 level) percentage of work-type responses; this finding suggests that these children had a stronger task orientation.

Table 1-2

RESULTS OF ANALYSES OF VARIANCE ON
COGNITIVE LEARNING MATERIALS

Dependent Variable	M_1	SD_1	M_2	SD_2	M_3	SD_3	D.F.	F
Stanford-Binet	94.63	8.89	95.60	8.59	96.49	9.23	1159	4.20*
Caldwell-Soule PSI	119.80	11.25	121.23	11.01	120.34	11.62	985	1.31
Pers.-Soc. Response	12.57	2.36	12.98	2.41	12.86	2.43	986	2.52
Assoc. Vocabulary	7.10	2.11	7.12	2.15	7.21	2.32	984	0.25
Concept Activ.-Numer.	7.31	2.67	7.56	2.10	7.41	2.50	981	0.86
Concept Activ.-Sensory	14.18	2.77	15.15	2.68	14.57	2.66	980	10.45**
Animal House	9.74	2.39	9.43	2.58	9.16	2.44	941	4.46*
Birch Work Response	89.39	7.46	90.33	6.26	91.22	6.03	1026	6.48**
Birch Verbal Response	61.01	9.24	63.35	10.22	61.09	8.27	1026	7.15**
Birch Spont. Response	112.14	3.10	112.04	3.08	112.07	3.08	1026	0.09
Parent Attitude Toward Head Start	194.36	21.24	196.77	13.56	196.01	15.26	697	1.13

M_1 = Mean for low level on program variable

M_2 = Mean for mid level

M_3 = Mean for high level

** F significant at .01 level

* F significant at .05 level

Furthermore, children in classes with higher values on this program variable also performed better on the Stanford-Binet (.05 level of significance). A conflicting finding, however, is the decrease in Animal House scores with higher values.

In general, the results did not show as large a positive association with cognitive performance as might have been expected. It should be noted, however, that this program variable is simply a measure of what cognitively-oriented materials were observed in the centers; it does not provide a measure of how extensively and in what ways the materials were actually used. Perhaps many teachers did not organize their work so that the materials were effectively integrated into daily classroom activities. In any case, the mere availability of cognitive materials was not necessarily an adequate condition for increased cognitive growth.

Two studies conducted by researchers at Temple University may be relevant to the present findings. These studies examined the effects of introducing supplementary materials such as tape recorder, Polaroid cameras, toy animals, magnets, etc., into Head Start classes. These materials were in many respects similar to the materials represented by the variable used in the present study. It was found that the supplementary materials increased the amount of cooperative play in Head Start classes (Busse, Ree, and Gutride, 1970). However, it was also found (Busse, Ree, Gutride, Alexander, and Powell, undated) that scores on the performance subtests of the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) were lower for children in classes with the supplementary materials. There were no significant differences on the Animal House subtest of the WPPSI, whereas in the present study, children in classes with greater quantity and condition of cognitive-oriented materials had lower Animal House scores than those in classes with less material.

Parent-Centered Program

Because of the strong emphasis in the Head Start national guidelines on active parent participation, it was felt of interest to examine the relationships between the local programs' degree of emphasis on parent involvement (as reported by the teachers) and the associated levels of child performance and parent attitudes. The split on this variable formed two groups; a High group consisting of children whose teachers reported any emphasis on parent involvement; and a Low group whose teachers reported no emphasis at all on parent involvement or participation.

A detailed discussion of results on Parent-Centered Program is neither useful nor necessary, as there was only one significant difference, that at the .05 level. As Table 143 shows, there was no evidence that efforts to involve parents were positively (or negatively) associated with parent attitudes or participation in community activities.

It is quite likely that the present finding simply reflects the very limited involvement of parents in even the most Parent-Centered Programs. For example, the top value on this variable for any program was 14 points out of a possible 35 points. Translated into actual operations, this means that the High group on this variable had only a few meetings during the entire year and used few special incentives to maintain the parents' interest and involvement. Very few parents participated in a policy-making role. If efforts to achieve parent involvement are to have significant impact on the types of child and parent variables evaluated in this study, it appears that they must be conducted at a much higher level of intensity or perhaps use entirely different approaches than those included in the study.

Actually, this finding on the effect of parent involvement activities is not altogether surprising in the light of several earlier Head Start studies. In her review of Head Start research literature, Stearns (1971) concluded (pp. 101-102) that:

> "It is a fairly general finding that induced parent participation does not make noticeable difference in the preschool child's performance

Table 143

RESULTS OF ANALYSES OF VARIANCE ON

PARENT-CENTERED PROGRAM

Dependent Variable	M_1	SD_1	M_2	SD_2	D.F.	F
Stanford-Binet	92.93	9.54	92.60	8.30	1250	0.42
Animal House	9.12	2.32	9.02	2.54	1012	0.36
Birch Spont. Response	111.95	3.37	111.76	3.02	1102	1.01
Factors Affecting Test Perform.	67.09	6.97	66.03	7.91	1282	6.12*
Parent Attit. Toward Head Start	195.54	16.83	196.24	15.64	753	0.34
Parent Attit. Toward Education	143.82	26.42	144.56	28.07	756	0.13
Parent Feeling of Power	123.25	26.67	121.93	25.47	756	0.46
Parent Involve. in Community	9.33	2.44	9.32	2.44	764	0.00
Parent Feeling of Alien.	16.87	3.07	16.78	3.35	758	0.13

M_1 = Mean for low value on program variable (i.e., not parent-centered)

M_2 = Mean for high value (parent-centered)

* F significant at .05 level

> unless that participation is fairly intensive, that is, at least regular attendance at weekly meetings focused on a fairly narrow topic ... The effects on the parents themselves of ... [less intensive] ... participation have been even more difficult to identify and measure."

To illustrate her point, Stearns cites an unpublished study by Janet Lee McCarthy which looked at changes in parent attitudes and in child's language ability for different levels of parent participation. The level which was most comparable to a "High" rating on the Parent-Centered Program variable in the present study was one in which parents had regular weekly meetings. This participation level did not differ significantly from a no-participation group, on either the parent or child measures.

The SRI (1971) Study of Planned Variation in Head Start also failed to show a statistically significant impact of parent involvement on children's gains in preacademic or general cognition variables. Furthermore, Herman and Adkins (1970) found no significant differences between high and low parent-participation groups on children's IQ, Preschool Inventory, Animal House, or Gumpgookies test of achievement motivation; however, high-involvement parents did report increased feelings of personal power, and in one case placed greater emphasis on the importance of education. Clarizio (1968) reported no differences in mothers' attitude toward various aspects of education and school, between parents with high and low levels of participation in discussion meetings and counseling sessions.

The results of prior research on parent participation have not been entirely one-sided, however. Other studies can be cited in which parent participation has had favorable impact on children's performance and/or parents' attitudes (e.g., Stern, et al. 1968; Gilmer, Miller, and Gray, 1970; Weikart and Lambie, 1967). However, most of the studies showing positive findings have involved levels or types of parent participation that were beyond the range of activities covered by our Parent-Centered Program variable, or at least represented only a miniscule fraction of the classes represented in our total data base. That is, successful parent-involvement efforts have typically used very frequent and concentrated group meetings; have included an intensive program of home visits; have enlisted the parents actively in the teaching process itself; have used well-developed and carefully packaged materials designed specifically for the purpose; and/or have concentrated their efforts on a few well-defined objectives. These conditions, by and large, did not hold for many of the classes in the present study.

To summarize the overall findings regarding children's performance in different types of programs, there is considerable evidence that a number of program variables were significantly associated with gains on a variety of performance measures. However, in most instances, a particular program variable had positive relationships with only a limited subset of the performance measures, and either no associations or even negative relationships with other measures. A possible conclusion is that each child should be exposed to a carefully planned variety of teaching procedures and approaches, with each learning experience designed by the teacher to achieve a specific, well-defined goal. As one example of this principle, cognitive-development goals might best be fostered by an emphasis on independence and self-care, while affective-development goals might be better achieved by socialization activities. No single approach or emphasis is likely to be optimal for all goals.

6. Interactions Between Child and Program Variables

Given that several program variables were significantly related to performance, were the relationships different for different subgroups of children? Were some program approaches positively associated with performance gains for one subgroup, and either not related or negatively related for another subgroup?

The major method selected for studying the relationships between program variables, child subgrouping variables, and performance, was to perform one-way analyses of variance for different subsets of children; this method provided independent measures of the association between program variables and performance for children of different age levels, different pretest IQ's and urban vs. non-urban residency. General trends in the results of the analyses are summarized below. These summaries, for convenience of expression, refer to "program impacts" and "program effects." In all cases, however, these terms simply indicate statistical associations or relationships between the program variables and the performance measures in question; any cause-and-effect relationships can only be inferred.

Initial IQ

Several program variables had differential patterns of impact for the different levels of initial (pretest) IQ. For example, effects of teacher education and teacher experience were found mainly in the Low IQ group (IQ's below 85). On the other hand, the impacts of classroom emphasis on independence and self-care and on child socialization were seen primarily in the High IQ group (IQ's above 95). There is no obvious explanation for these divergent results, but the greater negative impact of teacher education and experience on lower IQ children is consistent with the premise that the more highly educated teachers, particularly, had difficulty in communicating and empathizing with young disadvantaged children. This presumed communication problem might have been especially strong in the more highly educated teachers' interactions with lower IQ children, whereas the higher IQ children might have been less adversely affected by differences in style of expression, etc. Similarly, it might be conjectured that specific program emphases such as independence and self-care, and child socialization, had greatest impact on higher IQ children because the teachers were better able to communicate the program's intentions to that group of children.

In an earlier experiment, Cawley (1968) looked at relative gains in three groups of Head Start children, one group with an initial mean IQ of 73.42, a second group with a mean of 88.76, and a third with a mean IQ of 103.24. (These means are very roughly comparable to the three IQ levels defined in the present study.) Cawley reports that the higher IQ children gained more than those with lower IQ's. However, several other studies (e.g., Alexander, 1968; Weikart, Deloria, Lawser, and Weigerink, 1970) have reported larger gains for lower IQ children. Thus the results of earlier research are somewhat equivocal, and in any case are difficult to compare directly with the present discussion, which is concerned primarily with the differential impacts of different program approaches on different IQ groups.

Child's Age

The impacts of program emphasis on independence and self-care, and of teacher's mode of control, were found largely in the older children (60 months or older), whereas the impacts of quality of teacher's cognitive input, availability of large-muscle equipment, and teacher's education were seen primarily in the younger children (under 60 months). These mixed results may conceivably be interrelated with differences in the children's initial cognitive levels. Age was found to have a correlation of -0.30 with Stanford-Binet pretest scores, and a correlation of -0.09 with the Caldwell-Soule. This would indicate that older children tended to be less advanced intellectually at the time they entered Head Start. The age-IQ interaction may result at least partially from the fact that in states with state-wide kindergarten programs, a "normal" child between five and six years of age would be in kindergarten, whereas a retarded child of that age would be sent to Head Start, if eligible.

Most earlier studies that have considered the age variable have looked at overall program effects on different age groups, rather than at differential effects of different program approaches on the different age groups. In a few studies, (e.g., Karnes, 1968), a trend has been reported for younger children to make larger overall gains than older children.* Stearns' (1971) summary of Head Start research, however, concludes that, at least within the age range of two to six years, the exact age of preschool experience does not seem critical; effective gains, she points out, can be achieved at any age level.

Urban vs. Non-urban Residency

In most instances where there were clearcut differences in the impact of program variables for urban and non-urban children, the significant impacts were in the urban children. This was true, for example, of teacher's mode of control, teacher's experience and education level, and program emphasis on language activities. Most of these differences were probably due to the fact that the urban sample was much larger than the non-urban sample (1550 vs. 411) and covered a wider range on both independent and dependent variables.

In summary, there was clear evidence of interaction effects between program variables and child-description variables. That is, a program approach that was associated with superior performance for one group of children was not necessarily superior for another group, and in some cases there were reversals in the direction of the relationships. As an example of the interactive effects, for children under five years of age, teacher avoidance of physical control and discipline was significantly associated (.01 level) with higher Caldwell-Soule performance; for children over five years there was no significant relationship between the two variables. An example of an actual reversal in direction involved the degree of emphasis on language-related activities. For children under five years of age, a strong language emphasis was associated (.01 level) with _lower_ performance on one subscore of the Caldwell-Soule and on the Birch Verbal Response score; for children over five, a strong language emphasis was associated (.01 level) with higher performance on those same measures. Although causality cannot be directly demonstrated from these relationships, it appears that the teachers' classroom procedures and the areas of program emphasis should be tailored somewhat to the children's characteristics, as well as to the specific program goals.

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*The break point in Karnes' analysis was between three and four years of age, whereas in the present study the break was at 60 months.

One means of accomplishing greater individualization or tailoring Head Start might be by having the classroom aides take a larger role in the instruction. Anecdotal reports by classroom observers make it clear that some Head Start teachers had carefully worked out allocations of responsibility for themselves and their aides; in certain cases the aides played a vital role in freeing the teachers from routine drillwork and exercises so that they could concentrate on meeting individual child needs. In other classes, according to the reports, the aides' roles had not been clearly defined, or they were relegated to purely custodial or clerical functions that left the teachers with the total teaching responsibility. In this latter situation, the teacher could often do little to individualize the classwork, because of the need to maintain control over the entire class. Perhaps all Head Start teachers should be given more intensive training in how to make the best possible use of aides, and in how to allocate duties so that the teachers can be more responsive to the individual children's needs.

CHAPTER XIV

EXECUTIVE SUMMARY

This report describes the characteristics of children, families, and programs in samples of full-year Head Start classes operating in 1968-69. A supplementary report will present findings from 1966-67 and 1967-68 samples. The study was designed to identify changes associated with Head Start participation, and the conditions under which these changes were greatest. This is not a comprehensive report on Head Start; only some aspects of child development in relation to only one component of the program--the child's classroom experience--are considered. There are no control groups of eligible children who did not attend Head Start; the emphasis is on comparisons within the Head Start sample to see what kinds of classroom experiences "work best" for what kinds of children.

The data analyzed in this study were collected by a university-based network of Evaluation and Research Centers. They included pretest and posttest data from a variety of child performance instruments including both cognitive and social-emotional measures. In addition, data on the parents' attitudes were collected, pre and post, by means of interviews. Data on the Head Start programs, their facilities, and their staffs were collected by questionnaires, checklists, and rating and observation forms.

A. WHAT KINDS OF CHILDREN AND PARENTS PARTICIPATED?

Over 98% of the sample children were between four and six-and-a-half years old; they were almost evenly divided between boys and girls. Over two-thirds were black, and more than three-fourths were from urban centers of over 50,000 population. Approximately one-third were from Southern states.

On both the Stanford-Binet and Animal House tests of intelligence, the overall pretest means for the sample children were below the national average (e.g., a mean Stanford-Binet IQ of 89.04 compared to the general-population average of 100). Those children who had previously attended Head Start or other preschool programs had significantly higher entry scores on most measures, including both the Stanford-Binet and the Caldwell-Soule cognitive tests, but were still below the general-population averages.

The scores on virtually all child measures covered a broad range (e.g., Stanford-Binet IQ scores from under 70 to over 120), indicating the fallacy of regarding Head Start enrollees as a homogeneous group.

Most of the sample children came from low-income families with little education. The typical family had a total annual income of only around $4,000. Fewer than half of the mothers, and fewer than a fourth of the fathers had completed a high-school education. In interviews, most parents expressed initially favorable attitudes toward Head Start and toward education, but most had strong feelings of alienation, and little confidence in their power to improve matters.

B. WHAT WERE THE PROGRAMS LIKE?

Most of the sample children (96.48%) were in classes with female teachers between 22 and 45 years of age. There were nearly equal numbers of black and white teachers. While over 60% of the children had teachers with a bachelor's degree or higher in general education, less than a fourth had teachers with a degree specifically in early childhood education. Fewer than half had teachers who reported having had any preparatory training specifically for Head Start, and only a fourth had teachers with prior paid experience with disadvantaged preschool children.

In self-reports about their major areas of classroom emphasis, most teachers indicated higher priority for child-centered themes (e.g., mental health, positive self-image) than for task-centered, language-centered, or self-care goals. There was relatively little emphasis, according to the teachers, on parent-involvement activities. A somewhat different picture of the teachers and programs emerged from the ratings by independent observers. These ratings indicated, on the average, about equal program emphasis on cognitive goals, social-emotional goals, and "concern for the individual child."

On all of the program-emphasis dimensions, as rated both by teachers and by observers, there were large variations among classes, pointing up the heterogeneous nature of the Head Start programs. Wide variability was also observed in the physical resources of the different classes. Ratings of the classes' quantity and condition of cognitive-oriented materials, large-muscle exercise equipment, and sensory-motor materials, all varied over most of the rating scales.

C. DID HEAD START CHILDREN AND THEIR PARENTS MAKE GAINS?

The sample children made statistically significant pre-post gains on all cognitive measures, including a Stanford-Binet IQ gain of 4.59 points. There were sizable variations in performance change among children, with one child in eleven gaining 18 IQ points or better. In the social-emotional domain, children made significant overall gains in ability to adapt to the Stanford-Binet test conditions. Parents gained significantly in their positive attitudes about the value and importance of education.

D. DID SOME KINDS OF CHILDREN GAIN MORE THAN OTHERS?

The largest gains were made by children who had initially low IQ scores (below 85), and who were from non-urban communities (under 50,000 population). Most findings followed the rule that children with the lowest pretest scores on a given measure made the largest gains on the measure. There was little systematic relationship between performance gain and children's age, sex, or mothers' educational level.

E. WERE THERE LARGER GAINS IN CERTAIN TYPES OF PROGRAMS?

Several program-description variables were significantly associated with performance gains on a number of cognitive, social-emotional, and attitudinal measures. On cognitive measures (e.g., Stanford-Binet, Caldwell-Soule Preschool Inventory), scores were significantly higher for children with teachers who avoided any use of physical control and discipline, and who emphasized classroom activities fostering the children's independence and self-care. Superior cognitive performance was also experienced by children in classes with more and better large-muscle exercise equipment (e.g., swings, slides, balls, etc.). There was no evidence of better performance by children whose teachers had higher levels of general education or prior paid experience with disadvantaged preschoolers;

in fact, for some measures a negative association was found with those variables. A possible inference is that specific teacher skills in working with young children from poor families may be more important than general academic or experiential credentials.

In the social-emotional domain, superior gains in children's ability to adapt to test conditions and in their oral fluency were made by children in classes that emphasized socialization activities among children, and between children and teachers. Emphasis on independence and self-care, which was positively associated with cognitive performance, was negatively associated with two of the social-emotional measures. It appears that a given program approach may be desirable for some program goals and undesirable for other goals; a possible inference is that teachers should plan their class periods to include several different procedures and approaches, each tailored to a specific program goal.

Children in classes with greater emphasis on language-related activities gave larger numbers of spontaneous-extension responses to Stanford-Binet items; this may be an indication of greater verbal fluency. However, language emphasis was not significantly related to performance on the vocabulary portion of the Caldwell-Soule Preschool Inventory, or to the number of oral responses to Stanford-Binet items. This overall lack of consistent associations between language emphasis and verbal performance may reflect the relatively small number of teachers who reported strong emphasis on language-related activities.

Children in classes with more cognitively-oriented materials (e.g., books, science materials, etc.) gave significantly more work-type responses (as contrasted with avoidance responses) to Stanford-Binet items, but did not show consistently superior performance on the cognitive measures; this may conceivably indicate that the teachers did not adequately integrate the materials into the classroom activities.

Degree of program emphasis on parent involvement (as reported by teachers) was not significantly related to the parents' attitudes or community participation. This finding may reflect the very limited involvement of parents in even the most parent-centered programs, and the fact that few parents participated in a decision-making role.

In summary, several program variables were significantly related to performance, but no single approach was associated with superior performance for all program goals.

F. DID CERTAIN TYPES OF CHILDREN GAIN MORE FROM CERTAIN KINDS OF PROGRAMS?

There was considerable evidence of interaction effects between child variables and program variables. That is, a program approach associated with superior performance for one group of children (e.g., children with higher IQ's) might not have any relationship with performance differences for another group (e.g., children with lower IQ's), or might even be associated with poorer performance for the second group. As an example, the positive relationships of certain performance measures with classroom emphasis on independence and self-care and on child socialization were seen primarily in the higher IQ group. On the other hand, the negative associations of performance with "teacher's general education" and "teacher's paid experience with disadvantaged young" were found mainly in the lower IQ group. Similarly, the positive associations of performance with teachers' avoidance of physical control, and with amount of large-muscle equipment, were primarily in children five years old or more, whereas the associations with teachers' level of general education were primarily in children under five years.

An example of a reversal in direction of association between performance and program approach involves the degree of emphasis on language-related activities. For children under five years old, a strong language emphasis was associated with lower performance on two measures, whereas for older children, a strong language emphasis was associated with higher performance on those same two measures.

One possible inference from these results is that teaching approach should be tailored somewhat to individual child needs as well as to specific program goals. It is suggested that greater individualization might be achieved by careful role-structuring for teachers and aides, so that the aides can assume responsibility for much of the large-group drillwork and free the teacher for more work with individuals and small groups.

APPENDIX A

LOCATIONS AND DIRECTORS OF HEAD START E&R CENTERS

Dr. Herbert Zimiles
Bank Street College of Education
New York, New York

Dr. Frank Garfunkel
School of Education
Boston University
Boston, Massachusetts

Dr. Carolyn Stern
Graduate School of Education
University of California
Los Angeles, California

*Dr. Virginia Shipman
University of Chicago
Urban Child Center
Chicago, Illinois

Dr. Dorothy Adkins
University of Hawaii
College of Education
Honolulu, Hawaii

Dr. Russell Tyler
University of Kansas
Department of Human Development
and Family Life
Lawrence, Kansas

Dr. Robert Boger
Michigan State University
College of Home Economics
East Lansing, Michigan

Dr. Myles Friedman
University of South Carolina
School of Education
Columbia, South Carolina

Dr. Edward Johnson
Southern University
Psychology Department
Baton Rouge, Louisiana

Dr. Shuell Jones
Tulane University
Center for Teacher Education
New Orleans, Louisiana

Dr. William Meyer
Syracuse University
Department of Psychology
Syracuse, New York

*Dr. Robert Thorndike
Columbia University
Teachers College
Department of Psychology
New York, New York

Dr. Theron Alexander
Temple University
Philadelphia, Pennsylvania

Dr. John Pierce-Jones
University of Texas
Child Development Evaluation and
Research Center
Austin, Texas

*Not in 1968-69 Evaluation

APPENDIX A (Cont'd)

E&R CENTER INTERVENTION STUDY REPORTS

Adkins, Dorothy C., and Herman, Hanna. *Hawaii Head Start Evaluation: 1968-69*. Final Report, Head Start Research and Evaluation Center, University of Hawaii. January 1970.

Alexander, T., and others. *Temple University Annual Report, Child Development Research and Evaluation Center for Head Start*, 1968-69. Temple University. August 1969.

Garfunkel, F. *Preschool Education and Poverty: The Distance in Between. Final Report of 1968-69 Intervention Program*. Head Start Evaluation and Research Center, Boston University. July 1970.

Jones, S. H. *Curricular Intervention in Language Arts Readiness for Head Start Children*. Head Start Evaluation and Research Center, Tulane University. August 1969.

Lindstrom, D., and Tannenbaum, J. *Concept and Language Development of a Group of Five Year Olds Who Have Attended the Syracuse University Children's Center Intervention Program*. Syracuse University. September 1970.

Pierce-Jones, J., and Cunningham, G. *Curricular Intervention to Enhance the English Language Competence of Head Start Children: Final Report on Head Start Evaluation and Research*, 1968-69. Texas University. August 1969.

Stern, Carolyn. *Maximizing the Value of Evaluation for the Head Start Teacher: Final Report*, UCLA Head Start Evaluation and Research Center. University of California, Los Angeles. August 1969.

APPENDIX B

MORE DETAILED DEFINITIONS OF VARIABLES USED IN ANALYSES OF VARIANCE

PROGRAM VARIABLES

Teacher Background Data

1. Description: Level of teacher's general education preparation.

   Abbreviation: TGEDPREP   Source: Sample Class Teacher Staff (post).

   Composition: For each class, this variable is obtained for the same teacher interviewed in the Post Program Interview with Teacher (PPIWT). "Grade-school diploma or less" is scaled at 6 points; "Some high school" at 9 points; and so on to a maximum of 20 points for "doctorate." Thus a high score indicates a teacher with extensive formal education, but not necessarily in an area directly related to her teaching role.

2. Description: Length of teacher's previous paid experience with disadvantaged preschool children.

   Abbreviation: PDEXDSYG   Source: Sample Class Teaching Staff (post).

   Composition: For each class, this variable is based on the teacher interviewed in the Post Program Interview with Teacher. "None" is scaled at 0 points; "Under 6 months" at 3 points: "6 months to one year" at 9 points; on up to a maximum of 66 points for "Over 5 years." A high score therefore indicates a teacher with extensive professional experience in working with preschool age children from poverty families.

Teacher Dynamics/Behavior

1. Description: Teacher's quality of cognitive input.

Abbreviation: POT-COGN Source: Post Observation of Teacher (P.O.T.)

Composition: This is a computed variable based on 15 items that were previously associated in a factor analysis performed on the P.O.T. by the Head Start Research Center at the University of Hawaii, under the direction of Dorothy Adkins. Each of the 15 items describes an observation of a different type of teacher classroom behavior believed to represent desirable cognitive input, e.g., "Teacher response to individuals," "Teacher coping techniques," "Multi-sensory stimulation," "Acceptance of alternative answers," etc. For each item, 0 points are given if that behavior occurs infrequently; 1 point if it occurs occasionally; and 2 points if it occurs frequently or constantly. Points are averaged for each class across the items, so class scores can hypothetically range from 0 to 30. A high score indicates that the teacher was generally rated as demonstrating a high level of cognitive input.

2. Description: Type of control used by teacher.

Abbreviation: PIT-126A Source: Post Program Interview with Teacher (PPIWT).

Composition: This variable is based on a single item (126A) from the PPIWT, which asks about the teacher's mode of control of children. On the theory that more abstract, verbal control is superior to physical control, "No physical control" and "Scolding" are scaled higher than "Mild physical" and "Severe physical." The possible range of values is from 0 to 5.

Program/Curriculum

1. Description: Parent-centered program.

   Abbreviation: PARNTCNT Source: Post Program Interview with Teacher.

   Composition: This variable is computed from 25 items in the PPIWT which appeared to relate to the class' degree of emphasis on parent involvement and participation. Some of these items deal with types of parent involvement activities ("Was there a parent education program this year?"); some deal with the number and variety of methods used to maintain parent participation (money, symbols, praise) and to achieve the goals of meetings with the parents (films, printed materials, role-playing); and some deal with the number of meetings and the number of parents attending those meetings. Items were scaled so that higher scores were given to classes that had more and better-attended meetings; that had an organized parent education program; and that used a variety of methods to attract parents to meetings and to achieve the goals of the meetings. A fairly complex formula was used to combine items so that any given class can theoretically obtain a total score ranging from 0 to 35.

2. Description: Program emphasis on child independence and self-care.

   Abbreviation: IND-SELF Source: Post Program Interview with Teacher.

   Composition: This variable is computed from the teacher's responses to questions about different types of child activities that might be emphasized in the classroom. Eleven of the 40 activities seem particularly related to independence and self-care behavior, These include, for example, "Go to toilet alone"; "Tidiness"; "Stand up for his own rights"; "Observe good health practices"; etc. To calculate the value of the IND-SELF variable, the number of the 11 traits marked by the teacher as important program goals is multiplied by a weighting factor. This weighting factor, which can range from 0 to 15, depends on the frequency with which different ones of the 11 traits are listed as among the five most important program goals, the second five most important goals, etc. The scaled values for IND-SELF can theoretically range from 0 to 165, with high values indicating heavy classroom emphasis on children's independence and self-care.

3. Description: Program emphasis on child socialization.

Abbreviation: CHLDSOCL Source: Post Program Interview with Teacher.

Composition: This variable is computed from the teacher's responses to questions about child traits or behaviors that might be emphasized in the classroom. Fifteen of the 40 traits seem particularly related to social behavior with other children and with adults. These include, for example, "Participation in small groups"; "Trust of adults"; "Enjoy other children"; "Work and play cooperatively"; etc. To calculate the value of the CHLDSOCL variable, the number of the 15 traits marked by the teacher as important program goals is multiplied by a weighting factor. This weighting factor depends on the frequency with which different members of the 15 traits are listed as among the five most important program goals, the second five most important goals, etc. The scaled values for CHLDSOCL can theoretically range from 0 to 225, with high values indicating heavy classroom emphasis on children's socialization.

4. Description: Classroom emphasis on language program.

Abbreviation: LANG-PRG   Source: Post Program Interview with Teacher.

Composition: This variable uses 27 items dealing with the classroom application of language-related procedures and materials. One set of items deals with the teacher's use of such activities as "Story period," "Informal language stimulation," "Show and tell," and "Audio-visual equipment." The second set concerns the number and length of instructional sessions using these language-related procedures, and the number of children in those sessions. Individual items are scaled to give higher values to classes that use a large number of the language-related approaches, for long time periods and for large numbers of children. The items are combined by a complex formula to yield a possible range for different classes of 0 to 300.

Materials and Equipment

1. Description: Classroom materials for cognitive learning.

Abbreviation: COGNMATL   Source: Class Facilities and Resources Inventory (Post).

Composition: This variable is based on 20 items dealing with the quantity and condition of materials and equipment that might help to enhance cognitive learning. These include learning games, tape-recorders, slides, cameras, science equipment, books, etc. Scaled values for the individual items are combined by a simple additive formula that permits a total ranging from 0 to 38. High scores indicate classes with many items of cognitively-related materials and equipment in excellent condition.

2. Description: Class equipment to exercise large muscles.

Abbreviation: MUSCLEQP Source: Class Facilities and Resources Inventory (Post).

Composition: Computation of this variable is essentially the same as for COGNMATL, but it is based on 10 items dealing with the quantity and condition of equipment that could help to exercise and develop children's large muscles. This equipment includes slides, swings, boxes, wheeled toys, and balls. The possible range in total scaled score is 0 to 20, with high scores indicating classes with large quantities of large-muscle play equipment in excellent condition.

DEPENDENT VARIABLES

All dependent variables used in the correlational analyses and the analyses of variance for this study are posttest scores adjusted for differences in the corresponding pretest scores.

Child Cognitive Behavior

1. Description: Stanford-Binet Test IQ

Source: Stanford-Binet Intelligence Test.

Composition: IQ scores are taken directly from the Stanford-Binet recording forms, with no additional re-scaling or computation.

2. Description: Normed total score from Caldwell-Soule Preschool Inventory.

Source: Caldwell-Soule Preschool Inventory.

Composition: Raw total scores taken directly from the Caldwell-Soule recording forms are converted into age-normed scores using a linear transformation equation based on norms previously developed by the Head Start Research Center at the University of Hawaii, under the direction of Dorothy Adkins. (See Herman and Adkins, 1970). These norms were based on pretest scores of 1575 children in the 1968-69 Head Start national evaluation sample and are divided into one-month age groups, so that they provide a good correction for differences in children's ages. Normed scores can theoretically range from 26 to 183.

3. Description: Personal-Social Responsiveness Subscore

Source: Caldwell-Soule

Composition: This scale is based on 18 items from the Caldwell-Soule. It and the other three Caldwell-Soule subscores listed below are raw (un-normed) scores. The items associated with each subscore were identified in a factor analysis performed in earlier research on the original Preschool Inventory. When the shorter revised version of the Preschool Inventory (the Caldwell-Soule) was developed, surviving items from the original factors were grouped to provide subscores retaining the original factor labels. The Personal-Social Responsiveness subscore is intended to reflect the child's knowledge of his own personal world and his ability to get along with and respond to communications of another person.

4. Description: Associative Vocabulary subscore

Source: Caldwell-Soule

Composition: The 12 Caldwell-Soule items used in this scale measure the child's ability to demonstrate awareness of the connotation of a word by carrying out some action or by associating to certain intrinsic qualities of the underlying verbal concept.

5. Description: Concept Activation-Numerical subscore

Source: Caldwell-Soule

Composition: This subscore, based on 15 items, reflects the child's ability to label quantities, to make judgments of "more" or "less," and to recognize serial positions.

6. Description: Concept Activation-Sensory subscore

Source: Caldwell-Soule

Composition: Based on 19 items, this subscore is intended as a measure of the child's awareness of certain sensory attributes (shape, size, motion, color) and of his ability to perform certain visual-motor tasks.

7. Description: Animal House scaled score.

Source: Animal House subtest of Wechsler Primary and Preschool Inventory.

Composition: This is a scaled (age-adjusted) score taken directly from the recording form for the Animal House. Scores can theoretically range from 0 to 19 and are intended to reflect the child's ability to learn new things rather than emphasizing knowledge previously gained.

Child Affective/Social Behavior

1. Description: Birch Work Response Score.

Source: Birch-Hertzig Response Form.

Composition: This is a computed score based on the examiner's description of the types of responses given by the child to questions on the Stanford-Binet. The score is calculated by the formula $\frac{X}{Y} \times 100$, where X is the number of Binet items for which the child gave a work-type response, and Y is the total number of items for which a work-type response could have been given (i.e., work plus non-work responses). Scores can theoretically range from 0.00 to 100.00, and a high score indicates a child who tends to give many work responses.

2. Description: Birch Verbal Response Score.

Source: Birch-Hertzig Response Form

Composition: Like the BWORK score, this score is computed as a percentage fraction between 0.00 and 100.00. The score represents number of the child's responses that the Stanford-Binet examiner classified as verbal responses, divided by the number of responses that could have been so classified, times 100. Thus, a high score indicates a child who tends to make verbal rather than non-verbal (e.g., head-shaking) responses.

3. Description: Birch Spontaneous Response Score

Source: Birch-Hertzig Response Form

Composition: This is a computed score which can yield values from 0.00 to 300.00. It is calculated by the formula $100\left[\frac{(V+W)-X}{Y} + 1.0\right]$, where V and W represent the number of verbal responses and extension responses (i.e., responses where the child volunteered additional information beyond the minimum response); X is the number of test items for which the child required one or more prompts from the examiner; and Y is the total number of responses that could have been classified as V, W, X, or Y. The constant 1.0 is added to avoid negative scores. A large score indicates a child who gives many verbal and extended responses and who requires minimal prompting from the examiner.

4. Description: Factors affecting Stanford-Binet test performance

Source: Inventory of Factors Affecting Test Performance (FATP)

Composition: This is a computed summary score indicating the extent to which the child's test performance is adversely affected by the test; by the examiner; and by generalized response conditions in the child himself, such as an excessively high or low level of activity or verbal expression, or inadequate usage of English. The score is calculated by adding the rescaled values of 13 items, each of which can have a value from 1 to 6. If the examiner has indicated that a given condition "Seriously" impairs the child's performance, that item is scaled at 1 point; mildly or moderately detrimental effects are given intermediate values; and a value of 6 points is given to an item if the condition is stated to have "No adverse affect." Thus a high total score indicates that the test, the examiner, and the child's own generalized response traits have little or no adverse effect on the child's Binet performance, and suggests that the child adjusts well to the demands of the test situation. The possible range of values is from 1 to 78.

5. Description: Gumpgookies normed score of achievement motivation.

Abbreviation: GUMP   Source: Gumpgookies.

Composition: A total raw score is calculated by adding the number of items answered "correctly" (i.e., the child selects the Gumpgookie depicting high achievement motivation.) This score is then normed to adjust for child's age, using a straight-line conversion equation developed by the Head Start Research Center at the University of Hawaii, under the direction of Dorothy Adkins. (See Herman and Adkins, 1970, for these norms which were based on pretest scores for 1485 children in the 1968-69 national evaluation sample.) The normed scores have a possible range from 28 to 144. A high score indicates a child who is highly motivated to achieve.

Parent Attitudes and Behavior

1. Description: Parent attitude toward Head Start

Source: Parent Interview

Composition: This variable is computed from scaled values for three items in the Parent Inteview that ask about the respondent's feelings toward Head Start. One item asks what type of influence Head Start has on the respondent's child; "Worse" is given a value of 0, "Unknown" or "Other" a value of 1, and a response naming a particular advantage (e.g., "Social," "Skills," "Maturity," etc.) a value of 2. A second item asks whether the respondent's child likes going to Head Start; "Does not like it" is scaled at 0, "Can't tell" at 1, and "Does like it" at 2. The third item asks what the child likes best about Head Start; "Nothing" is scaled at 0, "Don't know" at 1, and any specific features selected as liked best is scaled at 2. The values for the items are summed, multiplied by 100, and then divided by the number of items for which responses were obtained; the total score can range from 0.00 to 200.00, with a high score indicating positive parent feelings about Head Start.

2. Description: Parent attitude toward education.

Source: Parent Interview

Composition: This computed variable is based on nine items in the Parent Interview that seem to concern the parent's attitude toward the importance and value of eduction. For example, one item asks, "Is getting a good education the best way for people to improve the way they live?"; another asks "Do people with little education enjoy life as much as those with a lot?"; etc. Answers showing that the parent feels education is very important and necessary are given the highest scaled values (in a range from 0 to 2). The individual values are then summed, multiplied by 100, and divided by the number of the nine items for which responses were obtained. The combined score can range from 0.00 to 200.00, with higher scores reflecting positive parent attitudes toward education.

3. Description: Parent feeling of personal power.

Source: Parent Interview

Composition: This computed variable is based on nine items in the Parent Interview that seem to concern the parent's feeling of personal power (or conversely, feeling of powerlessness to control her environment). Examples of these questions are: "Do you think there is anything you can do to improve schools?" "If you disagree with the school principal, can you do anything about it?" "Do most teachers really want parents to visit the school?" Answers showing that the parent feels he or she can exercise considerable control are given higher values (on a scale of 0 to 2). The individual values are then summed multiplied by 100, and divided by the number of the nine items for which responses were obtained. The combined score can range from 0.00 to 200.00, with higher scores reflecting greater feeling of personal power and control.

4. Description: Degree of parent involvement in the community.

Source: Parent Interview

Composition: This computed variable is based on six items in the Parent Interview that seem to concern the degree to which the parent participates in various community activities. Types of activities listed include "Clubs or social groups," "Head Start or Community Action Program groups such as Parent Councils," "Groups interested in improving your PTA," "Religious groups such as church or choir," "Political action groups," and "Other groups." A rescaled value of from 0 to 5 is given to each item, with lower values for a response of little or no involvement, and higher values for responses showing participation in several community groups or activities. The individual values are then summed, resulting in a possible range of combined values of 0 to 30. A high value indicates a parent who is highly involved in community affairs.

5. Description: Parent's feeling of alienation.

Abbreviation: PI-ALN Source: Parent Interview.

Composition: This variable is computed from five items that concern the degree to which the parent feels alienated from the rest of society. For example, in these items the parent is asked to express agreement or disagreement with statements such as, "The lot of the average man is getting worse," "It's unfair to have children now with things working so bad," and "These days a person doesn't really know whom he can count on." Responses were rescaled so that high values (in a range of 0 to 5) are given for responses indicating that the parent *does* feel alienated. The five items are then combined to provide a possible range in total score of 0 to 25, with higher scores showing greater feeling of alienation.

SUBSETTING VARIABLES

1. Description: Child's initial (pre) IQ score.

   Source: Stanford-Binet Intelligence Scale (pre).

   Composition: This variable is taken directly from the Stanford-Binet (pre) recording form.

2. Description: Child's age

   Source: See Composition.

   Composition: This is the average of the child's age at the pretest administration of six different instruments: the Stanford-Binet, the Inventory of Factors Affecting Test Performance, the Caldwell-Soule, the Gumpgookies, the Sociometric, and the Birch.

3. Description: Urban vs. non-urban residence.

   Source: Master Data Card.

   Composition: This variable has a value of 1 if the child is from a city of 50,000 population or larger, and a value of 0 if he is from a smaller town, suburb, or rural area.

4. Description: Mother's education level.

   Source: Parent Interview.

   Composition: This variable is taken from a single item in the Parent Interview. "No school" is given a value of 1, and values increase to a maximum possible of 8 ("College graduate or higher").

APPENDIX C

FREQUENCY DISTRIBUTIONS OF PRETEST, POSTTEST, AND GAIN SCORES ON DEPENDENT VARIABLES

Table C-1

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON STANFORD-BINET

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 120	19	1.3	42	2.9
116-120	24	1.6	33	2.3
111-115	61	4.2	74	5.0
106-110	64	4.4	113	7.7
1-105	159	10.8	185	12.6
96-100	191	13.0	213	14.5
91-95	208	14.2	233	15.9
86-90	186	12.7	217	14.8
81-85	180	12.3	148	10.1
76-80	135	9.2	100	6.8
71-75	101	6.9	55	3.8
66-70	58	4.0	35	2.4
61-65	44	3.0	9	0.6
56-60	19	1.3	2	0.1
Below 56	17	1.2	7	0.5

N = 1466

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON

STANFORD-BINET

VALUES	FREQUENCY	PERCENTAGE
Above 47.9	2	0.1
43.0-47.9	2	0.1
38.0-42.9	3	0.2
33.0-37.9	1	0.1
28.0-32.9	7	0.5
23.0-27.9	33	2.3
18.0-22.9	86	5.9
13.0-17.9	157	10.7
8.0-12.9	237	16.2
3.0- 7.9	312	21.3
(-2.0)- 2.9	299	20.4
(-7.0)-(-2.1)	187	12.7
(-12.0)-(-7.1)	87	5.9
(-17.0)-(-12.1)	37	2.5
(-22.0)-(-17.1)	7	0.5
(-27.0)-(-22.1)	3	0.2
(-32.0)-(-27.1)	3	0.2
(-37.0)-(-32.1)	3	0.2

N = 1466

Table C-3

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON CALDWELL-SOULE PSI

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 140	54	4.4	123	10.0
136-140	45	3.7	94	7.6
131-135	81	6.6	153	12.4
126-130	109	8.8	153	12.4
121-125	88	7.1	147	11.9
116-120	111	9.0	132	10.7
111-115	132	10.7	119	9.7
106-110	87	7.1	79	6.4
101-105	127	10.3	81	6.6
96-100	119	9.7	54	4.4
91-95	82	6.7	29	2.4
86-90	82	6.7	29	2.4
81-85	52	4.2	14	1.1
76-80	27	2.2	5	0.4
Below 76	36	2.9	20	1.6

N = 1232

Table C-4

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON CALDWELL-SOULE PSI

VALUES	FREQUENCY	PERCENTAGE
Above 46.9	2	0.2
40.0-46.9	9	0.7
33.0-39.9	48	3.9
26.0-32.9	91	7.4
19.0-25.9	156	12.7
12.0-18.9	256	20.8
5.0-11.9	270	21.9
(-2.0)- 4.9	219	17.8
(-9.0)-(-2.1)	115	9.3
(-16.0)-(-9.1)	35	2.9
(-23.0)-(-16.1)	19	1.5
(-30.0)-(-23.1)	3	0.2
(-37.0)-(-30.1)	2	0.2
(-44.0)-(-37.1)	1	0.1
Below (-44.0)	6	0.4

N = 1232

Table C-5

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PSI: PERSONAL-SOCIAL RESPONSIVENESS SUBSCORE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
18	20	1.6	67	5.4
17	38	3.1	90	7.3
16	74	6.0	139	11.3
15	82	6.7	149	12.1
14	102	8.3	146	11.8
13	96	7.8	147	11.9
12	123	10.0	130	10.5
11	119	9.7	104	8.4
10	125	10.1	66	5.4
9	95	7.7	67	5.4
8	104	8.4	45	3.6
7	78	6.3	36	2.9
6	59	4.8	16	1.3
5	63	5.1	16	1.3
Below 5	55	4.5	15	1.2

N = 1233

Table C-6

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PSI: PERSONAL-SOCIAL RESPONSIVENESS SUBSCORE

VALUES	FREQUENCY	PERCENTAGE
Above 11.4	3	0.3
10.0-11.4	7	0.6
8.5-9.9	8	0.6
7.0-8.4	76	6.2
5.5-6.9	52	4.2
4.0-5.4	238	19.3
2.5-3.9	175	14.2
1.0-2.4	358	29.0
(-0.5)-0.9	132	10.6
(-2.0)-(0.6)	127	10.3
(-3.5)-(-2.1)	26	2.1
(-5.0)-(-3.6)	23	1.9
(-6.5)-(-5.1)	1	0.1
(-8.0)-(-6.6)	5	0.4
Below (-8.0)	2	0.2

N = 1233

Table C-7

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PSI: ASSOCIATIVE VOCABULARY SUBSCORE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
12	11	0.9	45	3.7
11	35	2.8	104	8.4
10	53	4.3	123	10.0
9	83	6.7	181	14.7
8	120	9.7	183	14.9
7	150	12.2	154	12.5
6	128	10.4	134	10.9
5	138	11.2	114	9.3
4	136	11.0	86	7.0
3	140	11.4	39	3.2
2	116	9.4	33	2.7
1	71	5.8	21	1.7
0	50	4.1	14	1.1

N = 1231

Table C-8

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PSI: ASSOCIATIVE VOCABULARY SUBSCORE

VALUES	FREQUENCY	PERCENTAGE
9.0-10.4	3	0.2
7.5-8.9	15	1.2
6.0-7.4	85	6.9
4.5-5.9	83	6.8
3.0-4.4	344	28.0
1.5-2.9	176	14.3
0.0-1.4	334	27.2
(-1.5)-(-0.1)	97	7.8
(-3.0)-(-1.6)	76	6.2
(-4.5)-(-3.1)	6	0.5
(-6.0)-(-4.6)	10	0.8
(-7.5)-(-6.1)	0	0.0
(-9.0)-(-7.6)	2	0.1

N = 1231

Table C-9
FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PSI: CONCEPT ACTIVATION-NUMERICAL SUBSCORE
(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
14	10	0.8	36	2.9
13	11	0.9	48	3.9
12	26	2.1	73	5.9
11	33	2.7	79	6.4
10	62	5.0	106	8.6
9	91	7.4	144	11.7
8	130	10.6	144	11.7
7	139	11.3	160	13.0
6	170	13.8	132	10.7
5	162	13.2	121	9.8
4	162	13.2	93	7.6
3	110	9.0	50	4.1
2	78	6.3	23	1.9
1	31	2.5	14	1.1
0	14	1.1	6	0.5

N = 1229

Table C-10

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON

PSI: CONCEPT ACTIVATION-NUMERICAL SUBSCORE

VALUES	FREQUENCY	PERCENTAGE
9.5-10.9	2	0.2
8.0-9.4	10	0.8
6.5-7.9	24	2.0
5.0-6.4	122	9.9
3.5-4.9	134	10.9
2.0-3.4	379	30.8
0.5-1.9	177	14.4
(-1.0)-0.4	254	20.7
(-2.5)-(-1.1)	51	4.1
(-4.0)-(-2.6)	63	5.1
(-5.5)-(-4.1)	6	0.5
(-7.0)-(-5.6)	6	0.5
Below (-7.0)	1	0.1

N = 1229

Table C-11

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PSI: CONCEPT ACTIVATION-SENSORY SUBSCORE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
18	92	7.5	332	27.0
17	64	5.2	151	12.3
16	75	6.1	134	10.9
15	104	8.5	110	9.0
14	93	7.6	112	9.1
13	110	9.0	100	8.1
12	104	8.5	69	5.6
11	93	7.6	57	4.6
10	118	9.6	41	3.3
9	86	7.0	47	3.8
8	87	7.1	30	2.4
7	60	4.9	19	1.5
6	45	3.7	11	0.9
5	34	2.8	6	0.5
Below 5	63	5.1	9	0.7

N = 1228

Table C-12

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON
PSI: CONCEPT ACTIVATION-SENSORY SUBSCORE

VALUES	FREQUENCY	PERCENTAGE
Above 13.0	3	0.3
12.5-13.9	4	0.3
11.0-12.4	10	0.8
9.5-10.9	18	1.5
8.0-9.4	82	6.7
6.5-7.9	69	5.6
5.0-6.4	216	17.5
3.5-4.9	141	11.4
2.0-3.4	298	24.3
0.5-1.9	135	11.0
(-1.0)-0.4	190	15.4
(-2.5)-(-1.1)	31	2.5
(-4.0)-(-2.6)	20	1.6
(-5.5)-(-4.1)	3	0.2
(-7.0)-(-5.6)	5	0.4
(-8.5)-(-7.1)	0	0.0
(-10.0)-(-8.6)	1	0.1
Below (-10.0)	2	0.2

N = 1228

Table C-13

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON ANIMAL HOUSE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
Above 16	9	0.8	11	0.9
16	11	0.9	16	1.4
15	8	0.7	19	1.6
14	19	1.6	36	3.0
13	40	3.4	70	5.9
12	63	5.3	72	6.1
11	122	10.3	141	11.9
10	134	11.3	162	13.7
9	161	13.6	164	13.9
8	158	13.4	169	14.3
7	158	13.4	115	9.7
6	146	12.3	94	7.9
5	94	7.9	73	6.2
4	39	3.3	31	2.6
Below 4	21	1.8	10	0.8

N = 1183

Table C-14

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON

ANIMAL HOUSE

VALUES	FREQUENCY	PERCENTAGE
14.0-15.4	1	0.1
12.5-13.9	1	0.1
11.0-12.4	1	0.1
9.5-10.9	0	0.0
8.0-9.4	14	1.2
6.5-7.9	19	1.6
5.0-6.4	58	4.9
3.5-4.9	72	6.1
2.0-3.4	276	23.3
0.5-1.9	175	14.7
(-1.0)-0.4	331	28.0
(-2.5)-(-1.1)	99	8.4
(-4.0)-(-2.6)	103	8.7
(-5.5)-(-4.1)	13	1.1
(-7.0)-(-5.6)	13	1.1
(-8.5)-(7.1)	6	0.5
(-10.0)-(8.6)	1	0.1

N = 1183

Table C-15

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON BIRCH WORK RESPONSE SCORE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
98.1-100.0	177	13.9	167	13.1
96.1-98.0	150	11.8	138	10.8
94.1-96.0	163	12.8	160	12.6
92.1-94.0	147	11.6	141	11.1
90.1-92.0	126	9.9	151	11.9
88.1-90.0	100	7.9	140	11.0
86.1-88.0	87	6.8	103	8.1
84.1-86.0	84	6.6	73	5.7
82.1-84.0	60	4.7	64	5.0
80.1-82.0	44	3.5	36	2.8
78.1-80.0	36	2.8	18	1.4
76.1-78.0	26	2.0	27	2.1
74.1-76.0	29	2.3	13	1.0
72.1-74.0	13	1.0	12	0.9
Below 72.1	30	2.4	29	2.3

N = 1272

Table C-16

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON BIRCH WORK RESPONSE SCORE

VALUES	FREQUENCY	PERCENTAGE
Above 29.1	6	0.5
24.2-29.1	7	0.6
19.2-23.1	25	2.0
14.2-19.1	37	2.8
9.2-14.1	93	7.3
4.2-9.1	197	15.6
(-0.8)-4.1	353	27.7
(-5.8)-(-0.9)	293	23.1
(-10.8)-(-5.9)	141	11.0
(-15.8)-(-10.9)	78	6.1
(-20.8)-(-15.9)	25	2.0
(-25.8)-(-20.9)	9	0.7
(-30.8)-(-25.9)	8	0.6

N = 1272

Table C-17

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON BIRCH VERBAL RESPONSE SCORE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
80.1-85.0	11	0.9	44	3.5
75.1-80.0	19	1.5	67	5.3
70.1-75.0	61	4.8	85	6.7
65.1-70.0	126	9.9	178	14.0
60.1-65.0	223	17.5	286	22.5
55.1-60.0	260	20.4	276	21.7
50.1-55.0	230	18.1	167	13.1
45.1-50.0	146	11.5	78	6.1
40.1-45.0	105	8.3	44	3.5
35.1-40.0	40	3.1	19	1.5
30.1-35.0	20	1.6	17	1.3
25.1-30.0	14	1.1	5	0.4
20.1-25.0	8	0.6	3	0.2
15.1-20.0	3	0.2	3	0.2
0.0-15.0	6	0.5	0	0.0

N = 1272

Table C-18

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON BIRCH VERBAL RESPONSE SCORE

VALUES	FREQUENCY	PERCENTAGE
44.5-49.4	1	0.1
39.5-44.4	2	0.2
34.5-39.4	5	0.4
29.5-34.4	16	1.3
24.5-29.4	26	2.0
19.5-24.4	59	4.6
14.5-19.4	122	9.6
9.5-14.4	176	13.8
4.5-9.4	266	20.9
(-0.5)-4.4	220	17.3
(-5.5)-(-0.6)	191	15.0
(-10.5)-(-5.6)	84	6.6
(-15.5)-(10.6)	55	4.3
(-20.5)-(15.6)	25	2.0
(-25.5)-(-20.6)	12	0.9
(-30.5)-(-25.6)	6	0.5
(-35.5)-(-30.6)	3	0.2
(-40.5)-(-35.6)	3	0.2

N = 1272

Table C-19

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON BIRCH SPONTANEOUS RESPONSE SCORE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
122.1-124	18	1.4	5	0.4
120.1-122	14	1.1	12	0.9
118.1-120	20	1.6	33	2.6
116.1-118	106	8.3	85	6.7
114.1-116	211	16.6	202	15.9
112.1-114	256	20.1	304	23.9
110.1-112	185	14.5	231	18.2
108.1-110	208	16.4	199	15.6
106.1-108	166	13.1	113	8.9
104.1-106	65	5.1	65	5.1
102.1-104	17	1.3	13	1.0
100.1-102	4	0.3	8	0.6
98.1-100	1	0.1	2	0.2
96.1-98	1	0.1	0	0.0
0.0-96	0	0.0	0	0.0

N = 1272

Table C-20

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON BIRCH SPONTANEOUS RESPONSE SCORE

VALUES	FREQUENCY	PERCENTAGE
10.9-12.8	3	0.2
8.9-10.8	13	1.0
6.9-8.8	24	1.9
4.9-6.8	81	6.4
2.9-4.8	143	11.2
0.9-2.8	256	20.1
(-1.1)-0.8	303	23.9
(-3.1)-(-1.2)	213	16.8
(-5.1)-(-3.2)	137	10.8
(-7.1)-(-5.2)	65	5.1
(-9.1)-(-7.2)	24	1.9
(-11.1)-(-9.2)	8	0.6
(-13.1)-(-11.2)	1	0.1
(-15.1)-(-13.2)	1	0.1

N = 1272

Table C-21

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON FACTORS AFFECTING TEST PERFORMANCE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
70-72	59	3.9	744	49.5
67-69	40	2.7	246	16.4
64-66	614	40.9	150	10.0
61-63	237	15.8	122	8.1
58-60	146	9.7	78	5.2
55-57	94	6.3	49	3.3
52-54	68	4.5	27	1.8
49-51	41	2.7	14	0.9
46-48	50	3.3	16	1.1
43-45	32	2.1	17	1.1
40-42	35	2.3	12	0.8
37-39	20	1.3	7	0.5
34-36	22	1.5	7	0.5
31-33	16	1.1	7	0.5
Below 31	29	1.9	7	0.5

N = 1503

Table C-22

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON FACTORS AFFECTING TEST PERFORMANCE

VALUES	FREQUENCY	PERCENTAGE
Above 47.9	2	0.2
43.0-47.9	9	0.6
38.0-42.9	10	0.7
33.0-37.9	11	0.7
28.0-32.9	33	2.2
23.0-27.9	43	2.9
18.0-22.9	66	4.4
13.0-17.9	111	7.4
8.0-12.9	296	19.7
3.0-7.9	565	37.5
(-2.0)-2.9	176	11.7
(-7.0)-(-2.1)	96	6.4
(-12.0)-(-7.1)	32	2.1
(-17.0)-(-12.1)	21	1.4
(-22.0)-(-17.1)	15	1.0
(-27.0)-(-22.1)	6	0.4
(-32.0)-(-27.1)	9	0.6
(-37.0)-(-32.1)	2	0.1

N = 1503

Table C-23

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON SOCIOMETRIC SOCIAL ISOLATE SCORE

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
99-100	201	15.8	188	14.7
97-98	285	22.4	270	21.2
95-96	228	17.9	208	16.3
93-94	148	11.6	163	12.8
91-92	161	12.6	172	13.5
89-90	74	5.8	97	7.6
87-88	83	6.5	73	5.7
85-86	37	2.9	39	3.1
83-84	27	2.1	27	2.1
81-82	10	0.8	5	0.4
79-80	11	0.9	21	1.6
Below 79	10	0.8	12	0.9

N = 1275

Table C-24

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON SOCIOMETRIC SOCIAL ISOLATE SCORE

VALUES	FREQUENCY	PERCENTAGE
28.0-31.9	1	0.1
24.0-27.9	1	0.1
20.0-23.9	1	0.1
16.0-19.9	6	0.5
12.0-15.9	20	1.6
8.0-11.9	56	4.4
4.0-7.9	174	13.6
0.0-3.9	433	34.0
(-4.0)-(-0.1)	349	27.4
(-8.0)-(-4.1)	165	12.8
(-12.0)-(-8.1)	46	3.6
(-16.0)-(-12.1)	16	1.3
(-20.0)-(-16.1)	4	0.3
Below (-20.0)	3	0.2

N = 1275

Table C-25

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PARENT ATTITUDE TOWARD HEAD START

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
200	777	88.7	806	92.0
166	72	8.2	38	4.3
150	1	0.1	2	0.2
133	20	2.3	23	2.6
100	4	0.5	3	0.3
66	1	0.1	4	0.5
Below 66	1	0.1	0	0.0

N = 876

Table C-26

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PARENT ATTITUDE TOWARD HEAD START

VALUES	FREQUENCY	PERCENTAGE
Above 76.9	5	0.5
62.0-76.9	17	1.9
47.0-61.9	1	0.1
32.0-46.9	67	7.6
17.0-31.9	0	0.0
2.0-16.9	1	0.1
(-13.0)-1.9	726	83.0
(-28.0)-(-13.1)	0	0.0
(-43.0)-(-28.1)	32	3.7
(-58.0)-(-43.1)	1	0.1
(-73.0)-(-58.1)	20	2.3
Below (-73.0)	6	0.7

N = 876

Table C-27

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PARENT ATTITUDE TOWARD EDUCATION

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
181-200	5	0.6	65	7.4
161-180	83	9.4	181	20.6
141-160	210	23.9	231	26.3
121-140	243	27.6	204	23.2
101-120	117	13.3	89	10.1
81-100	151	17.2	59	6.7
61-80	53	6.0	45	5.1
41-60	12	1.4	4	0.5
21-40	3	0.3	1	0.1
0-20	2	0.2	0	0.0

N = 879

Table C-28

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PARENT ATTITUDES TOWARD EDUCATION

VALUES	FREQUENCY	PERCENTAGE
Above 91.9	8	0.8
77.0-91.9	28	3.2
62.0-76.9	28	3.2
47.0-61.9	44	5.0
32.0-46.9	191	21.8
17.0-31.9	187	21.3
2.0-16.9	91	10.4
(-13.0)-1.9	172	19.5
(-28.0)-(-13.1)	60	6.8
(-43.0)-(-28.1)	25	2.8
(-58.0)-(-43.1)	34	3.9
(-73.0)-(-58.1)	7	0.8
Below (-73.0)	4	0.4

N = 879

Table C-29

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PARENT FEELING OF PERSONAL POWER

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
181-200	12	1.4	10	1.1
161-180	61	6.9	59	6.7
141-160	173	19.7	165	18.8
121-140	264	30.0	261	29.7
101-120	151	17.2	167	19.0
81-100	151	17.2	152	17.3
61-80	54	6.1	55	6.3
Below 61	13	1.5	10	1.1

N = 879

Table C-30

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON

PARENT FEELING OF PERSONAL POWER

VALUES	FREQUENCY	PERCENTAGE
125.0-139.9	1	0.1
110.0-124.9	1	0.1
95.0-109.9	0	0.0
80.0-94.9	7	0.8
65.0-79.9	21	2.4
50.0-64.9	16	1.8
35.0-49.9	36	4.1
20.0-34.9	166	18.9
5.0-19.9	98	11.1
(-10.0)-4.9	167	19.0
(-25.0)-(-10.1)	210	23.9
(-40.0)-(-25.1)	62	7.1
(-55.0)-(-40.1)	53	6.0
(-70.0)-(-55.1)	32	3.6
(-85.0)-(-71.1)	5	0.6
(-100.0)-(-85.1)	4	0.5

N = 879

Table C-31

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PARENT DEGREE OF INVOLVEMENT IN COMMUNITY

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	**PERCENTAGE**	**FREQUENCY**	**PERCENTAGE**
Above 18	6	0.7	5	0.6
18	1	0.1	6	0.7
17	4	0.5	4	0.5
16	17	1.9	14	1.6
15	13	1.5	17	1.9
14	32	3.6	43	4.8
13	29	3.3	32	3.6
12	95	10.7	84	9.5
11	66	7.4	53	6.0
10	126	14.2	127	14.3
9	105	11.8	78	8.8
8	172	19.4	175	19.7
7	88	9.9	82	9.2
6	127	14.3	161	18.2
Below 6	6	0.7	6	0.7

N = 887

Table C-32

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PARENT DEGREE OF INVOLVEMENT IN COMMUNITY

VALUES	FREQUENCY	PERCENTAGE
9.0-10.4	2	0.2
7.5-8.9	5	0.6
6.0-7.4	16	1.8
4.5-5.9	14	1.6
3.0-4.4	77	8.7
1.5-2.9	84	9.5
0.0-1.4	352	39.6
(-1.5)-(-0.1)	127	14.3
(-3.0)-(-1.6)	141	15.8
(-4.5)-(-3.1)	29	3.3
(-6.0)-(4.6)	29	3.3
(-7.5)-(-6.1)	4	0.5
(-9.0)-(-7.6)	4	0.5
Below (-9.0)	3	0.3

N = 887

Table C-33

FREQUENCY DISTRIBUTIONS OF PRE AND POST VALUES ON PARENT FEELING OF ALIENATION

(For Persons with Both Prescores and Postscores)

VALUES	PRE		POST	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
25-26	16	1.8	27	3.1
23-24	27	3.1	33	3.7
21-22	57	6.5	59	6.7
19-20	182	20.7	191	21.7
17-18	192	21.8	162	18.4
15-16	150	17.0	142	16.1
13-14	123	14.0	119	13.5
11-12	78	8.9	84	9.5
9-10	47	5.3	47	5.3
7-8	7	0.8	12	1.4
Below 7	2	0.2	5	0.6

N = 881

Table C-34

FREQUENCY DISTRIBUTIONS OF GAIN SCORES ON PARENT FEELING OF ALIENATION

VALUES	FREQUENCY	PERCENTAGE
Above 11.4	4	0.4
10.0-11.4	6	0.7
8.5-9.9	2	0.2
7.0-8.4	22	2.5
5.5-6.9	18	2.0
4.0-5.4	73	8.3
2.5-3.9	54	6.1
1.0-2.4	196	22.3
(-0.5)-0.9	171	19.5
(-2.0)-(-0.6)	183	20.8
(-3.5)-(-2.1)	38	4.3
(-5.0)-(-3.6)	72	8.2
(-6.5)-(-5.1)	10	1.1
(-8.0)-(-6.6)	16	1.8
(-9.5)-(-8.1)	4	0.5
(-11.0)-(-9.6)	8	0.9
Below (-11.0)	4	0.4

N = 881

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